BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAI‘I

In the Matter of the Application of	)	
	)	
HAWAIIAN ELECTRIC COMPANY, INC.,	)	
HAWAI‘I ELECTRIC LIGHT COMPANY, INC.,	)	
and MAUI ELECTRIC COMPANY, LIMITED	)	Docket No.
	)	
For approval to commit funds in excess of	)	
$2,500,000 for the Smart Grid Foundation Project,	)	
to Defer Certain Computer Software Development	)	
Costs, to Recover the Capital and Deferred Costs	)	
through the Renewable Energy Infrastructure	)	
Surcharge, and Related Requests	)	
	)	

APPLICATION OF
HAWAIIAN ELECTRIC COMPANY, INC.,
HAWAI‘I ELECTRIC LIGHT COMPANY INC., and
MAUI ELECTRIC COMPANY, LIMITED

ATTACHMENT 3 TO EXHIBIT E

AND

ATTACHMENT 4 TO EXHIBIT E

Attachment 3

Smart Grid Foundation Project

Exhibit E

Smart Grid Meter Data Management System Request for Proposal

Hawaiian Electric
Maui Electric
Hawai'i Electric Light

SMART GRID
METER DATA MANAGEMENT SYSTEM

REQUEST
FOR
PROPOSALS

RFP NO. 032715-04

Issue Date: 03/27/2015

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1 Request for Proposal (RFP) Structure

1.1 Introduction

Hawaiian Electric Company, Inc. hereby requests a proposal for The Smart Grid Meter Data Management System (MDMS) for the Hawaiian Electric Company, Inc. and its subsidiaries, Hawai'i Electric Light Company, Inc. and Maui Electric Company, Limited hereinafter collectively referred to as The Companies**.** The Companies invite suppliers to submit proposals for such products, consulting and implementation services in accordance with the requirements, terms, and conditions of this RFP.

This RFP sets forth the requirements for all products and services and solicits a detailed response from Bidders to include pricing and service descriptions in the specified format. Information set forth in this RFP is provided to allow Bidders maximum possible insight into the program as defined and known today. Please utilize this information as appropriate in crafting the Bidder's responses.

Note: The Companies reserve the right to modify this RFP at its sole discretion and will inform Bidders of changes as expediently as possible.

1.2 RFP Structure

This section describes how the RFP is structured and a brief description of each section.

Section One **RFP Structure**

This section outlines the sections of this RFP. Included is a brief description of each section.

Section Two **RFP Instructions**

This section outlines the instructions for responding to this RFP. Included are the general requirements for submittal of proposals.

Section Three **Project Description**

Initial introductory section provides background information on The Companies and an overview of the Smart Grid project, which leads to the issuing of this RFP.

Section Four **General Responsibilities**

This section includes the general responsibilities that the Selected Supplier and The Companies will have during the Meter Data Management System project.

Section Five **Proposal Submission Requirements**

This section describes each of the required sections of the proposal narrative to be submitted by each Bidder. The section concludes with a list of the ***required appendices.***

Section Six **Appendix A: Intent to Submit Bid Form**

This section contains an 'Intent to Submit Bid' form that must be completed by the Bidder and returned to The Companies.

Section Seven **Appendix B: Glossary**

This section contains a glossary of terms and acronyms that apply to this RFP and The Companies' Smart Grid Initiative.

Section Eight **Appendix C: Functional and Technical Requirements**

This section contains the Functional Requirements and product specific Technology Requirements to which the Bidder must review, respond, and return to The Companies, along with supporting information where required. Completion is mandatory for consideration.

Section Nine **Appendix D: General Technology and Cybersecurity Requirements**

This section contains the General Technology and Cybersecurity Requirements to which the Bidder must review, respond, and return to The Companies, along with supporting information where required. Completion is mandatory for consideration.

Section Ten **Appendix E: Detailed Cost and Staffing Model**

This section contains a multi-tab pricing sheet that captures licensing fees, upgrade fees, maintenance fees for the MDMS product, and the Bidder's rate card, implementation costs and training costs for the Bidder's services in support of the MDMS implementation project. Completion is mandatory for consideration.

Section Eleven **Appendix F: EPMO Standards and Sample Templates**

This section contains the EPMO Standards and Sample Templates that may be used on this project. They will be reviewed and adjusted as needed per collaborative agreements made between both parties in the project management phase.

Section Twelve **Appendix G: Technology Consulting Services Master Agreement Form**

This section contains The Companies' Technology Consulting Services Master Agreement Form.

Section Thirteen Appendix H: Business Travel and Expense Policy

This section contains The Companies' Business and Travel Expense Policy.

Should the Bidder find discrepancies or ambiguities in, or omissions from, this RFP that might affect price, it shall notify The Companies at once. Interpretation or clarification of the RFP bid documents, prior to the proposal due date will be made only by a written addendum issued to all Bidders who intend to submit a proposal.

2 Request for Proposal Instructions

This section describes instructions to Bidders in receipt of this Request for Proposal (RFP) in order for the Bidder to submit a proposal (referred to herein as “bid” or “proposal”) to provide to The Companies with the proposed Smart Grid Meter Data Management System (MDMS).

2.1 Bid Documentation Requirements

The Bidder, in addition to requirements defined in this Request for Proposal, shall include the following with their proposal:

- Financial Statements for the last three (3) years
- Dun & Bradstreet reporting number
- Standard Statement of Work used by Bidder for Specified Work in RFP
- Standard license agreement
- Standard support agreement

2.2 Confidentiality

This RFP has been prepared exclusively for The Companies and is proprietary in nature. The Companies reserve all copyrights for this document and its constituent parts and prohibits any unauthorized use or reproduction hereof. All or portions of this RFP and/or Appendices hereto may be designated or marked confidential ("Confidential Information"). Confidential Information shall not be disclosed to third-parties without The Companies prior written consent, except that the Bidder may disclose Confidential Information to the Bidder’s consultants, affiliates, attorneys or potential subcontractors who need the Confidential Information for purposes of preparing a responsive proposal, and provided that each such recipient is advised of the confidentiality of the Confidential Information and is bound by agreement or otherwise to preserve the confidentiality of the same.

2.3 Intent to Submit Bid Form

Bidders who receive this RFP from The Companies and who plan to respond to it must complete the “Intent to Submit Bid Form,” on or before 3:00 PM Hawaii Standard Time (HST) April 14, 2015. The form can be found in Appendix A.

Forms can be e-mailed to the location specified below. If assistance is needed, please contact Ms. Toni Mitobe-Shuster, Purchasing Contract Manager, via the e-mail address specified below. An electronic confirmation will be sent to the sender indicating the form was received. If the

confirmation is not received, we encourage the Bidder to contact The Companies to verify receipt of the Intent to Submit Bid Form. Intent forms received by The Companies after the Intent to Submit Bid due date may not be considered by The Companies.

Via E-mail:

SmartGridRFP@hawaiianelectric.com

2.4 Questions about the RFP

All inquiries or final questions regarding this RFP shall be submitted via e-mail on or before 3:00 PM Hawaii Standard Time (HST) on April 20, 2015 to Ms. Toni Mitobe-Shuster, Purchasing Contract Manager, via the e-mail address specified below. Preliminary questions to be addressed during the Bidder's Conference shall be submitted via e-mail on or before 3:00 PM Hawaii Standard Time (HST) on April 7, 2015 to Ms. Toni Mitobe-Shuster, Purchasing Contract Manager, via the e-mail address specified below. The Companies shall have the sole option of determining whether a response to a question is necessary or appropriate under the circumstances. If The Companies elect to respond to a question, it shall have the further option of determining whether it shall respond solely to the Bidder raising the question or to all Bidders, based upon its assessment of the materiality of the question.

Via E-mail:

SmartGridRFP@hawaiianelectric.com

2.5 Proposal Due Date

Bidder proposals must be received by The Companies, on or before 3:00 PM HST on Friday, April 24, 2015 (the Proposal Due Date). The Companies, at its sole discretion, may cancel or postpone the Proposal Due Date at any time by providing notice to each Bidder, which notice shall be deemed an amendment to this RFP. Proposals received after this time will not be accepted by The Companies for consideration.

Completed proposals must be in PDF, MS Word, MS Project, and/or MS Excel – Office 2000 or later, only. No other formats will be accepted. The Bidder will provide one (1) electronic copy to the location specified on or before the Proposal Due Date and time for receipt of proposals.

The proposal constitutes an irrevocable offer to The Companies if not modified or withdrawn prior to the Proposal Due Date, and which cannot be withdrawn by the Bidder for a period of ninety (90) days following the Proposal Due Date.

Proposals are to be submitted in accordance with the following:

One (1) Electronic copy:

Emailed to Hawaiian Electric Purchasing (SmartGridRFP@hawaiianelectric.com) by deadline

And, one (1) Hard copy:

Mailed to Hawaiian Electric Purchasing within four (4) business days of electronic deadline

Hawaiian Electric Company
Attention: Toni Mitobe-Shuster, CP11-VP
900 Richards Street
Honolulu, HI 96813

The Bidder should zip the softcopy documents to a size of 25MB or less to ensure delivery through The Companies FTP/SharePoint solution.

Date and time of proposal receipt will be recorded by The Companies. The Companies' record of receipt will be deemed controlling in the event of any dispute whatsoever relating to the delivery of a proposal. Proposals that are delivered after the Proposal Due Date, or otherwise not in conformance with the requirements of this RFP, may be rejected at The Companies' sole discretion and without notice to the Bidder.

2.6 Specific Exceptions

The Contract Documents resulting from this RFP will incorporate provisions of this RFP including without limitations its Appendices and Attachments. It shall be assumed that the Bidder agrees to the provisions of said documents, including all terms and conditions of the Technology Consulting Master Services Agreement attached hereto as Appendix G (Technology Consulting Master Services Agreement), unless exceptions are specifically and clearly listed in its proposal.

All exceptions to the Contract Documents shall be briefly and clearly stated, listed together and specifically identified as exceptions in the proposal. Each exception shall be separately stated, shall identify the relevant section/subsection of this RFP or its attachments, shall identify the reason(s) for taking the exception, and shall propose a briefly and clearly stated alternative. Proposals that fail to do so may be considered non-responsive. The Bidder should not enclose a copy of its own standard terms and say "see enclosure" as this will be considered non-responsive. The Companies shall have the right in its sole judgment and discretion to reject any proposal or evaluate it unfavorably based on exceptions taken.

2.7 Bidder Proposal Format

The proposal must be complete and clear. Each question in the RFP should be answered with minimum reference to standard Bidder printed/promotional material. Technical data sheets or other literature may be attached to the proposal. Failure to comply with the prescribed format or

failure to respond to all questions may disqualify the proposal. In order to expedite the evaluation of proposals, it is mandatory the Bidder follow the instructions contained herein and use the following format for its proposal submissions:

Table 1 - Proposal Format

Proposal Section	RFP Section(s)	Attachment(s)
1. Cover Letter	5.1	
2. Executive Summary	5.2	
3. Bidder company information	5.3	
4. Implementation Methodology, Scope and Approach	5.4	In-scope/Out-of-scope Matrix Functional Requirements (App. C) General Technical and Cybersecurity Requirements (App. D)
5. Organizational Change Management & Training	5.5	
6. Project Management Approach	5.6	Project Schedule
7. Proposed Project Organization	5.7	Projection Organization Chart Roles/Responsibilities Matrix Staff Loading Charts (App. E) Resumes
8. Proposed Pricing and Cost Summary	5.8	Detailed Cost Estimate (App. E) Global Rate Schedule (App.E)
9. Supplier Capabilities and Experience	5.9	5-year Product Roadmap
10. Technology Consulting Master Services Agreement	5.10	Technology Consulting Master Services Agreement
11. Bid Documentation Requirements	5.11	
12. Listing of All Exceptions	5.12	
13. Appendices	5.13	(all attachments above)

Bidders' response numbers must correspond to the question or item numbers in this RFP.

Bidders are required to prepare their response to this RFP according to these RFP Instructions and to the specific instructions to Bidders contained in each section of this RFP. Each Bidder

shall be solely responsible for and shall bear all costs incurred in its preparation of its proposal and/or its participation in this RFP, including, but not limited to, all costs incurred with respect to the review of the RFP documents, site visits, third-party consultant consultation, and investigation and internal communication with respect to matters pertaining to its proposal and this RFP, and the same shall not be reimbursed by The Companies to any Bidder, including the selected Bidder.

2.8 Completeness

The Bidder's proposal shall be complete, include all work that is indicated in this RFP, and also include all work that is normally considered part of the type of work covered by this RFP, whether or not such work is fully detailed or listed in this RFP.

Bidders are requested to submit proposals that are complete and unambiguous without the need for additional explanation or information. The Companies will make the final determination as to whether a proposal is acceptable or unacceptable solely on the basis of the proposal as submitted, and proceed with the proposal evaluation without requesting further information from any Bidder. If The Companies deem it otherwise desirable and in their best interest, then The Companies may, in their sole discretion, request from the Bidder additional information clarifying or supplementing, but not essentially modifying any proposal as submitted.

Proposals should be concise and factually supported. All questions should be answered, but the Bidder may indicate why certain questions are not relevant for its product or services. An unanswered question may be treated as an unsatisfactory response. Questions may be answered in whole or in part as appropriate by specific cross-reference to other answers in the proposal. Such cross-references should cite the exact section, page number, and/or paragraph number of the other answer or portion thereof. Imprecise or unclear references to other sections of the proposal, or references that do not specifically answer the question posed will be treated as an unsatisfactory response to the question. All questions must be followed immediately by its answer or reference.

Bidders must indicate which products and services requested in this RFP (including those in Appendices C and D) can or cannot be met by their product. Bidders must also review all terms set forth in this RFP (including all appendices and attachments) and indicate any exceptions. If the Bidder's proposal is accepted and the Bidder failed to propose any such product, term, or service, then the Bidder will be responsible for providing such product, term, or service at no additional cost to The Companies.

This RFP, the selected Bidder's proposal and all other material representations made by that Bidder in connection with its proposal likely will be written or incorporated into the Contract Documents between that Bidder and The Companies. Thus, by submitting a proposal, the Bidder understands and acknowledges that The Companies will rely on the proposal and all

material representations made in selecting the Bidder and in entering into the Contract Documents, and the Bidder warrants that the statements made in the proposal and other material representations are truthful and accurate.

2.9 Additional Information

After the receipt of proposals, The Companies may request additional information to clarify the proposals via questions submitted to Bidders or in individual meetings with selected Bidders. Failure by a Bidder to provide the additional information or to participate in such requested meeting may be a cause for disqualification.

The Companies reserve the right to request proposal clarifications from only those Bidders that The Companies deem in its best interest. The Bidders shall have responsibility to document all clarifications as change pages to the proposal.

2.10 Evaluation of Proposals

Proposals will be considered in conjunction with information submitted by other Bidders as well as any additional information as The Companies, in their sole discretion, deem appropriate.

The evaluation of proposals will be based upon criteria that The Companies, in their sole judgment and discretion, believe to be in the best interest of The Companies and their customers. Bidders shall not be entitled to disclosure of The Companies' evaluation criteria or information pertaining to The Companies' actual evaluation and analysis of proposals.

The Companies shall have the right to reject any proposal, which The Companies, in their sole judgment and discretion, believe to be unsatisfactory or unresponsive, and may, as well, at any time up to the award of the Contract Document, withdraw this RFP and elect not to award the Contract Document.

Subject to the foregoing, and other factors in their best interest, The Companies will review, evaluate, and recommend selection of a winning proposal. In rendering this decision, the following evaluation criteria may be utilized as a general guideline:

- Proposed Smart Grid Meter Data Management System software, hardware and operating system functional fit, usability and completeness
- Proposed Smart Grid Meter Data Management System software, hardware and operating system technical fit and completeness
- Smart Grid Meter Data Management System Supplier Profile, Health and Experience
- Implementation approach, experience and proposed resources that will be assigned/dedicated to the project
- Quality of implementation methodology and tools

- Adherence to Appendix G (Technology Consulting Master Services Agreement)
- Total Cost of Ownership of the proposed solution set
- Approach to Product Support and Upgrades (including 5-year Product Roadmap)
- Level of Risk and Uncertainty

Proposals will be evaluated as follows:

The Companies will review all submitted proposals and first determine if the submission complies with the above instructions and is complete. Those proposals that are accepted will be evaluated by The Companies' selection committee.

The Companies will make a final decision as to which Bidder(s) can provide, in the sole discretion of The Companies, including but not limited to, the best combination of technical and functional features, risk avoidance and cost.

2.11 Project Approach, Schedule and Organization

Bidders will be responsible for executing activities and tasks and providing deliverables in accordance with mutually agreed upon Contract Documents, which include the Statement of Work. See Appendix G for the Technology Consulting Master Services Agreement. The Companies' Smart Grid Enterprise project team will assist the Bidder as specified in the Contract Documents.

There may be two (2) on-site visits in which the Bidders will participate, depending on how far in the process they progress. The first visit will be for Short-listed Bidder On-site Presentations. The second visit (Preferred Suppliers On-site Key Personnel Visit) will occur once the Hawaii Public Utilities Commission Decision and Order (D&O) is approved and the final selection activities commence.

Short-listed Bidder On-site Presentations will be scheduled per the table in Section 2.16 Key RFP and/or business processes:

For the MDMS, the vendor scenarios for the product demonstrations should be focused around the processing of interval data and billing exceptions that would need to be handled by the Customer Service team. Vendors should demonstrate:

A) How their tools present billing exceptions that require manual correction

B) How their tools support the billing analyst in the correction of the exceptions/interval data in order to clear the exception

C) How their tools support rebilling scenarios

D) How their tools support viewing of Meter messages/communications

E) Dashboards or reports on system/billing health (e.g. were all the reads requested from the AMI head-end received? processed? Were they all sent to SAP CIS? How many non-communicating meters are there, etc.)

A proposed agenda for the demonstration is shown below:

DAY 1	
Time	**Topic**
8:00 AM	Introductions
8:15 AM	Company Overview
8:30 AM	Product Overview and Strategy
9:30 AM	Functional Requirements Fit
12:00 PM	Lunch
1:00 – 4:00PM	Scenarios from The Companies (Section 2.11)
	Additional Product Demonstration
	Free form Question and Answer with product demonstrations
5:00 PM	Close
DAY 2	
Time	**Topic**
8:00-12:00	Technical and Cybersecurity Requirements Fit
	Application Architecture
	Data Architecture
	Integration Architecture
	Infrastructure Architecture
	Security Architecture
12:00	Close

2.12 Right to Reject

The Companies reserve the right, at their sole discretion, to reject any or all proposals received, and to waive irregularities contained therein.

Each Bidder must agree that such rejection shall be without liability on the part of The Companies for any damage or claim brought by any Bidder because of such rejections, and the Bidder shall not seek recourse of any kind against The Companies because of such rejections. The filing of any proposal in response to this Request for Proposal shall constitute an agreement of the Bidder to these conditions.

2.13 Bid Validity Period

All pricing Bids submitted shall be effective and relied upon by The Companies for an eighteen (18) month period. See Section 2.16 - Key Project Dates, for the proposed timeline. Additionally, the approved key resources listed in the proposal will be available for sixty (60) days following the Proposal Due Date. If any of the key resources need to be replaced, The Companies and the Bidder will mutually agree to the new resource(s).

2.14 Award

The Companies shall have the right to award the contract to the Bidder(s) that, in The Companies' sole judgment and discretion, and in addition to the considerations stated in paragraph 2.10 above, has provided a proposal that is in the best interests and has the best value to The Companies and its customers. The selected Bidder(s) shall then be referred to as "Selected Supplier(s)".

The Companies shall have the right to award the contract to other than the lowest priced bidder.

The Companies shall have the right to determine not to award the contract, or to re-bid, restate, revise or cancel this RFP or any project related to the RFP.

The award, if any, will be announced in writing to the Selected Supplier, and The Companies shall provide notice to all other Bidders that their offers have not been accepted.

The Companies shall not be required to explain its selection of the Selected Supplier to any Bidder or explain to any Bidder why its proposal was not selected.

The Selected Supplier may additionally be notified of its selection by The Companies by phone, electronic mail or other means.

The selection is provisional until execution of the Contract Documents by The Companies and the Selected Supplier. Until such time, The Companies may revoke or change its selection for any reason, including but not limited to failure of The Companies and the Selected Supplier to agree on final terms for the Contract Documents.

No Bidder shall have the right to protest or appeal the award of the Contract made by The Companies.

2.15 Terminology

Appendix B attached hereto and incorporated herein is a glossary of terms and acronyms that apply to this RFP.

2.16 Key RFP Dates

The following are projected key dates for this RFP.

Table 2 - Key RFP Dates

Schedule of Events	Due Date	Time
Questions for Bidders Conference	April 7, 2015	3:00 pm HST
Bidders Conference	April 13, 2015	TBD
Intent to Submit Bid Form	April 14, 2015	3:00 pm HST
Deadline for RFP Questions	April 20, 2015	3:00 pm HST
Proposal Due Date	April 24, 2015	3:00 pm HST
Short-Listed Vendor Presentations	June 1-5, 2015	TBD
Conditional Award (pending positive PUC Decision and Order (D&O)	June 12, 2015	TBD

2.17 Modification of Proposal

A proposal may be modified at any time prior to the Proposal Due Date.

In order to modify its proposal, the Bidder must submit a revised proposal, clearly identified as such, which expressly supersedes and replaces the earlier proposal from the Bidder. The revised proposal must identify the date of the earlier proposal which it is superseding and replacing.

Revised proposals are subject to all requirements of this RFP, shall not incorporate or rely upon the proposal that it is superseding and replacing and must be delivered to or received by The Companies on or before the Proposal Due Date.

A proposal may not be modified or revised after the Proposal Due Date, unless explicitly amended during the course of the on-site visit and subsequent negotiations, as documented and approved by The Companies and the Bidder.

2.18 Withdrawal of Proposals

A proposal may be withdrawn at any time prior to the Proposal Due Date.

A proposal will be deemed withdrawn upon receipt by The Companies of a Withdrawal of Proposal notice at the office identified in Section 2.5, above, on or before the Proposal Due Date.

Proposals that have been withdrawn pursuant to this section will not be considered by The Companies and may be discarded by The Companies.

Proposals may not be withdrawn after the Proposal Due Date for any reason, including, but not limited to, errors or mistakes, for a period of ninety (90) days following the Proposal Due Date.

3 Project Description

Information provided in this section, while preliminary, general and subject to change, is intended to assist the Bidder to understand the general functionality required of the solution being considered as part of this project. The Companies intend to implement the selected hardware and operating system as supplied by the Bidder with a minimum amount of customization beyond normal configuration, unless required to meet The Companies' operational needs.

3.1 Hawaiian Electric Company

The Hawaiian Electric Company, Inc. is a wholly owned subsidiary of Hawaiian Electric Industries, Inc., which is a publicly owned corporation. The Hawaiian Electric Company, Inc. has two subsidiaries, Maui Electric Company, Ltd., and Hawai'i Electric Light Company, Inc.

The Hawaiian Electric Company, Inc., Maui Electric Company, Ltd., and Hawai'i Electric Light Company, Inc. are collectively referred to for purposes in this document as "The Companies".

Additional information can be found at www.hawaiianelectric.com or will be made available upon request.

3.2 Smart Grid Initiative Background

At the request of the Hawaii Public Utilities Commission (Commission), The Companies have developed a comprehensive roadmap and business case for the implementation of a Smart Grid infrastructure. The Companies based the roadmap and business case on a comprehensive review of other smart grid implementations and on carefully specified fundamental assumptions, documented in The Companies' Smart Grid Roadmap and Business Case (http://www.solari.net/documents/portfolio/Solari-Smart-Grid-Roadmap-&-Business-Case.pdf).

The Companies propose to implement smart grid through all three of our operating utilities, on all five islands served. Smart grid modernizes the electric grids, enables more renewable energy, reduces outage times, increases the efficiencies of our operation, reduces costs, and, most importantly, delivers tangible benefits to our customers.

Our overarching goal is to efficiently and cost-effectively implement a smart grid that brings the greatest benefit to our customers. Smart grid brings enormous changes for The Companies, for our customers, and for the state of Hawaii. Our plans reflect our understanding of the complexity of this undertaking.

The foundation of The Companies' smart grid platform is a two-way communications network that connects points along the distribution grid to its back-office software. Smart grid

applications run on that network providing detailed information about the performance of the distribution grid. The primary applications The Companies are implementing are:

1. The Advanced Metering Infrastructure (AMI) application supports the installation of smart meters and other smart grid devices in residential and commercial sites. AMI automates many current manual processes, such as meter reading, customer billing, and service connects and disconnects.
2. The Volt/VAR Optimization (VVO) application, by accessing voltage data collected by AMI, enables our operators to safely and more precisely control voltages which results in saved energy, less carbon dioxide emissions, and lower customer bills. VVO increases efficiency.
3. The Advanced Distribution Management System (ADMS) application provides a centralized platform for operators to leverage multiple smart grid systems and capabilities including advanced metering infrastructure (AMI), volt/var optimization (VVO), distribution automation (DA), and demand response (DR). The ADMS will help to facilitate the integration of distributed energy resources (DER), improve operational efficiencies, increase the reliability of the distribution network, and reduce costs.
4. The Pre-Payment System allows The Companies to utilize the AMI infrastructure to phase in payment options for customers, allowing customers the flexibility to pay for electricity before they use it while avoiding the need for a deposit.
5. Customer Facing Solutions allows customers to access their private, personal energy consumption. They can view detailed information about their energy usage, estimate their monthly usage, and receive tips for decreasing their energy consumption. They can also access additional features such as the Pre-Payment system.

The Companies anticipate installing 500,000 Smart Meters across the islands per the following approximate schedule:

Quantities	500,000 smart meters (300,000 Oahu, 100,000 (Maui, Molokai, Lanai), 100,000 Big Island
Meter installation schedule	Oahu 2016-2018, Maui 2016-2017, Molokai 2016, Lanai 2016, Big Island 2016-2017

As a component of Item 1, the Advanced Metering Infrastructure (AMI) application, The Companies have identified the need for a Meter Data Management System (MDMS) to provide the following representative high-level functions to The Companies:

1. Insulate The Companies from the massive volume of interval data (15 minute intervals transmitted hourly for 500,000 meters, with 25% at 5 minute intervals)

2. Meter to Billing Determinant Processing, including collection, validation, estimation, aggregation and distribution
    a. Store thirteen (13) months + of interval data
    b. Be the first and only place all raw interval data is persisted
    c. Ensure data quality of usage data through the VEE (Validation, Editing and Estimating) process
    d. Summarize usage data for billing purposes
3. Make data accessible to users and other systems
4. Manage read schedules, route and process events and generate work orders for meter population
5. Additional functions and interval data reporting are documented in Appendix C: Functional Requirements

3.3 Scope of the Meter Data Management System Project

The Bidder will supply a Meter Data Management System ("MDMS") solution that includes the MDMS software licenses, annual maintenance and support, and associated services to support the MDMS's implementation and transition to operations (the "Project"). In addition to the licensed software components, the Bidder will design, configure, install, integrate, build, test, implement and provide post-go-live support for the MDMS.

3.3.1 MDMS Software and License

Provide the software and license(s) and any associated maintenance agreement for the MDMS. The license(s) should allow for multiple instances of the MDMS – in development, testing, production (as needed for 24/7 operation), maintenance and training environments, and any second site backup location.

3.3.2 MDMS Interface Adaptors and License

Provide the software and license(s) for any MDMS to Enterprise Service Bus (ESB) Interface Adapters software available to support MDMS integration. The proposed solution must integrate with the Silver Springs Network (SSN) AMI network and the Customer Information System (CIS) SAP Customer Service System and provide a platform for delivering meter data to other applications such as the Volt/VAR Optimization (VVO) application, the Distribution Automation (DA) application, the Pre-Payment System and Customer Facing Solutions. The license(s) should allow for multiple instances of the license(s) – in development, testing, production, maintenance and training environments, and any second site backup location. This includes any software in addition to the core adaptors required to support deployment, configuration and testing.

3.3.3 Services

3.3.3.1 The Bidder shall provide the appropriately skilled and experienced resources, with supporting methodology and tools, to gather requirements and provide a detailed architecture and design of the MDMS and its integration with The Companies' other systems working within The Companies' ITS applications architecture framework. The Bidder will develop a set of approved test cases and scripts with The Companies.

3.3.3.2 The Bidder shall provide the resources to install, configure, and build the MDMS and its integrations as per the detailed design.

3.3.3.3 The Bidder shall provide the resources, tools and methodology to test all functionality implemented by the Bidder in accordance with the test cases and scripts developed and signed off as part of the design process. The Bidder shall perform functional, performance, stress, integration, system, and security and privacy testing of the MDMS and its integrations with The Companies' other systems. The Bidder will document all tests performed and results achieved and include them as part of the testing deliverables. The Bidder will be responsible for data prep in support of all phases of testing including User Acceptance Testing. The Bidder will additionally provide support for The Companies during User Acceptance Testing.

3.3.3.4 The Bidder shall provide expertise in MDMS user and system administration training covering all features of the MDMS product, including recommending and assisting in the delivery of an overall training program for end users and administrators. This will include:

- 3.3.3.4.1 Assessment of The Companies training needs as reviewed and approved by The Companies;
- 3.3.3.4.2 Development of a proposed training plan;
- 3.3.3.4.3 Development of training materials; and
- 3.3.3.4.4 Delivery of training based on assessment of needs (e.g. classroom, train the trainer, in the field, on-line).

3.3.4 Documentation

3.3.4.1 Product documentation: The Bidder will deliver all manuals and documentation relating to the MDMS product and other software products provided as part of the solution. This would include, but not necessarily be limited to:

- 3.3.4.1.1 User product manuals
- 3.3.4.1.2 System administrator product manuals

3.3.4.2 Training documentation: The Bidder will provide all documentation relating to the training scope of work. The Bidder will produce and provide:

- 3.3.4.2.1 Training assessment document
- 3.3.4.2.2 User training documentation handout and course material

3.3.4.2.3 System administrator training handout and course material

3.3.4.3 Process documentation: The Bidder will deliver all documentation relating to the services supplied and the process surrounding the MDMS software and any ESB integration. This would include but not necessarily be limited to:

3.3.4.3.1 MDMS and data storage requirements and detailed design documentation

3.3.4.3.2 MDMS and data storage installation and configuration documentation

3.3.4.3.3 MDMS ESB integration requirements and detailed design documentation

3.3.4.3.4 MDMS ESB Installation and configuration documentation

3.3.4.3.5 Functional, performance, security and integration test cases

3.3.4.3.6 Results from functional, performance, security and integration testing

The Companies will procure and provision all hardware required to support the Project.

3.4 IT Standards and Requirements

The Bidder should familiarize themselves with The Companies' General Technical and Cybersecurity requirements as identified in the Appendix D and provide adequate information in response to each requirement in order to reflect the Bidder's compliance.

3.5 Project Management Requirements

The Companies require that the Bidder will assume the prime contractor role and assume responsibility for project management and performance of each subcontractor.

The Companies require that this Project be managed utilizing rigorous complex level project management standards as defined by The Companies' Enterprise Project Management Office (EPMO). The EPMO conforms to the Project Management Institute's (PMI) standards for project management as documented in The Companies' Project Management Book of Knowledge (PMBOK) and contained in the EPMO's Project Management Resource Center.

3.5.1 EPMO Project Management Standards

It is expected that the Bidder will conform to the EPMO standards and recommend changes that will benefit a project of this scope and size, as needed.

See Appendix F – EPMO Standards and Sample Templates for details.

3.5.2 Earned Value Management (EVM)

The Companies require EVM tracking and reporting on this Project. The Bidder will manage and maintain the master project schedule which will include all resources working on the Project (i.e. The Companies, Bidder, and all subcontractors of The Companies and of the Bidder).

3.5.3 Change Control

The Bidder is expected to provide and employ a standardized change control procedure and methodology across all Project phases. This includes a detailed description of all required steps to submit, review and approve/reject change requests, as well as guidelines to be followed by the steering committee for any escalation or dispute resolution. The Bidder must utilize the change control processes and workflow tools that are currently available in the Appendix. Summarized below are examples of the change control processes that the Bidder will be responsible for managing in collaboration with The Companies.

3.5.3.1 Project Change Control

Process utilized to manage all material changes (scope, timeline, resources or cost) which impact the Project. The process is performed when the Project Team is aware of a change to the then approved Project Schedule Baseline and/or associated documents.

3.5.3.2 Scope Change Control

Process utilized to perform the day to day management of scope changes that will be requested by the Project Team, stakeholders and/or end-users including:

1) Process – Addition or reduction of business processes included
2) Deliverable – Addition or removal of deliverables as requested
3) Function – Addition or removal of functions
4) Resource – Addition or removal of resources

3.5.3.3 Contractual Change Control

Process utilized to request the significant removal, addition or change to any major item not explicitly defined or covered within the original contract or SOW (Statement of Work). This process is normally executed for items that could not be resolved or have to be escalated from the scope change control procedure.

3.5.4 Quality Assurance Expectations

In general, The Companies will be engaging external parties to perform three (3) types of quality assurance activities on this Project. The Bidder is expected to collaboratively work with these external parties in order to ensure a successful implementation. Additionally, stage gate deliverables of the Bidder will be directly related to meeting the expected quality assurance targets that are set and mutually agreed to at the start of the Project.

3.5.4.1 Systems Integrator Safe Guarding

The Companies may be employing third-party Systems Integrator (SI) to perform safeguarding throughout the Project's lifecycle. The SI safeguarding services for implementation may include planning, feasibility, technical integration, operations competence and go-live checks. This is to ensure that the implementation results in a quality delivery both from a technical and functional business perspective. It is expected that the Bidder collaborate and work with SI personnel when needed as outlined by the safe guarding process.

3.5.4.2 Project Management Quality Assurance

The Companies will be employing personnel either directly from the EPMO or externally contracted by the EPMO in order to conduct quality assurance activities on the Project for ensuring the appropriate level of project management rigor. This will include but is not limited to review of the Project's charter, integrated project management plan, schedule, budget, risk and issues log, reporting, change control procedures and log, project management information system, and earned value management tracking. It is expected that the Bidder collaborate and work with the EPMO personnel/contractor in order to complete this process.

3.5.4.3 SOX Controls Implementation Audit

The Companies will be employing a third-party vendor to conduct SOX control evaluations and audits in order to ensure that the Project will conform to The Companies' required SOX compliance. It is expected that the Bidder will collaborate and work with the third-party vendor in order to complete this process.

4 General Responsibilities of the Selected Supplier

This section describes the general project responsibilities, project management procedures, project documents, installation, and usability of the Selected Suppliers' solution. This section may be replaced either in part or in its entirety during the contract negotiation period pursuant to a detailed Statement of Work and other Contract Documents.

The general responsibilities of The Companies and the Selected Supplier are presented below. These general responsibilities are in addition to responsibilities specified in other sections of this RFP.

4.1 The Selected Supplier's Responsibilities

The Selected Supplier is required to address the following:

4.1.1 The proposed architecture options for the Selected Supplier's solution set(s), to include considerations and recommendations for virtualization, disaster recovery, high availability and infrastructure management.

4.1.2 The Selected Supplier must have conformed to the Proposal Submission Requirements defined in Section 5.

4.1.3 Short-listed Selected Suppliers must demonstrate the product's capabilities and usability to The Companies for final assessment.

4.2 The Companies' Responsibilities

The Companies will be responsible for the following:

4.2.1 Review the Selected Supplier's RFP responses to ensure inclusion of all required items and specifications.

4.2.2 Provide resources required to evaluate the Selected Supplier's proposed solution set based on specifications provided by the Selected Supplier**.**

4.2.3 The Companies or their designated representatives will manage and maintain the master project schedule which will include all resources working on the Project (i.e. The Companies, Selected Supplier, and all subcontractors of The Companies and of the Selected Supplier).

5 Proposal Submission Requirements

The sections that follow describe the proposal elements that will be required in order for the Bidder's proposal to be considered. Each section contains guidance as to the content and format (as applicable) expected by The Companies.

5.1 Cover letter

Provide a cover letter which contains the following mandatory information:

1. a description of the Bidder's understanding of the scope and solution to be provided;
2. the full name of the Bidder's organization;
3. the name, title, telephone number, fax number, and email address of the person to be contacted regarding the content of the proposal;
4. the name, title, telephone number, fax number, and email address of the person authorized to commit the Bidder in a contractual agreement, if different from that indicated above;
5. the complete address of the Bidder's organization including branch offices and/or divisions that will assist in performing the contracted services;
6. explicit acknowledgement of the Bidder's review and acceptance of the Terms and Conditions of the RFP identifying any exceptions taken with specific items;
7. a statement that the proposal meets the specifications of each subsection of the RFP;
8. the validity period of the offer;
9. the signature of an authorized representative of the Bidder's organization.

5.2 Executive Summary

Include an executive summary which briefly and concisely conveys what the Bidder sees as the most important messages of the proposal, the factors of differentiation, and the critical points that The Companies should consider in its evaluation. Please explain how the Bidder's strategic direction will benefit The Companies from an immediate and long-term perspective. The format of this item is at the discretion of the Bidder but should include an overview of the Bidder's understanding of the proposal requirements, the Bidder's response to the requirements, and the Bidder's experience with projects of this nature.

5.3 Bidder Company Information

5.3.1 Company Overview:

Provide a brief overview and history of the Bidder including the following:

5.3.1.1 Company mission statement

5.3.1.2 Organizational chart which provides an overview of the company structure (business unit and industry alignment, if applicable) to include the names and titles of the corresponding executives

5.3.1.3 A brief description of The Bidder's core portfolio service offerings that align with The Companies' immediate and longer-term objectives

5.3.1.4 Financial viability, include audited financial statements for the past three (3) years

5.3.1.5 A summary of any pending litigation(s)

5.3.2 Alliances, Partnerships and Certifications

Identify any relevant alliances, partnerships or affiliations with other third-party organizations. Describe any certifications awarded to the company by any third-party organizations. Indicate how these will benefit The Companies.

5.3.3 Product and Practice Overview

5.3.3.1 State how long the Bidder's Meter Data Management System has been commercially available.

5.3.3.2 State the current version of the Bidder's Meter Data Management System, how long that version has been commercially available, and how many instances are currently operating in production.

5.3.3.3 Provide the name and title of the Meter Data Management System Product Development business lead and the length of time that individual has been with the Bidder's company.

5.3.3.4 State the number of currently active utilities using the Meter Data Management System and the total number of completed implementation engagements, broken down by the proposed version and previous versions still supported.

5.3.3.5 Provide the Bidder's overall client retention rate across the company for the past three (3) years. Provide the Bidder's client retention rate for the Meter Data Management System product for the past three (3) years, broken down by the proposed version and previous versions still supported.

5.3.3.6 Provide a revenue breakout with geographic segmentation for the proposed Meter Data Management System product for the past three (3) years. At a minimum, include

as part of the response, total Meter Data Management System product revenues ($U.S.) for each year, and the Meter Data Management System product revenues ($U.S.) and percentage of revenues associated with implementation services.

5.3.3.7 Identify the total number of members within the Meter Data Management System business line. At a minimum, include as part of the response, a matrix providing the following information which should also include identification of relevant Electric Utility industry experience and current availability.

1. Total resources within the practice
    - Number of resources with 0-3 years of experience
    - Number of resources with 4-7 years of experience
    - Number of resources with > 8 years of experience
2. Number of functional resources within the practice
    - Number of functional resources with 0-3 years of experience
    - Number of functional resources with 4-7 years of experience
    - Number of functional resources with > 8 years of experience
3. Number of technical resources within the practice
    - Number of technical resources with 0-3 years of experience
    - Number of technical resources with 4-7 years of experience
    - Number of technical resources with > 8 years of experience
4. Geographical distribution of resources within the business
5. Number of each type of MDMS staff/consultant within the business
6. Identify the MDMS modules and technology experience of the Bidder's staff/consultants. Include the number and percentage of staff/consultants with respect to such experience.
7. Number and percentage of staff/consultants in the Bidder's practice that are trained and experienced on the following software packages:
    - IBM WebSphere ESB
    - Other software products as proposed

a. Identify the attrition rate within the Bidder's MDMS business for the past three (3) years and the most current quarter.

b. Identify the Bidder's utilization rate within the MDMS business, including and excluding resources in training.

5.3.4 Future Technology Strategy and Plan

In all cases, the Bidder shall make a clear distinction between requirements which are met using existing system functionality and requirements which can be met only through additional development activity. This distinction is required whenever requirements are not met by the version of the Bidder's products which is currently available for general release. However, The Companies are very interested in the Bidder's future technology roadmap and plans.

5.3.4.1 Describe the future strategy, roadmap and vision of the Bidder as it relates to the proposed system(s).

5.3.4.2 What enhancements to the Bidder's proposed system(s) software will be included in new versions during the next five (5) years? Please provide a 5-year product roadmap.

5.3.4.3 Describe how customer requests and regulatory enhancements are incorporated into the product roadmap.

5.3.4.4 Does the Bidder have a customer advisory process, and what recommendation(s) from these advisory groups have been implemented recently?

5.3.4.5 Please provide The Companies with prior history as to how strategic direction has actually been implemented for the proposed system(s) – or other products within the product line.

5.3.5 Prior and Current Engagements with The Companies

If applicable, identify and describe any prior and/or current engagements that the Bidder has had with any business entities of The Companies. Identify the points of contact within The Companies with whom the Bidder had the relationship.

By responding to this RFP, The Companies will not be precluded from engaging Bidders in other work that is outside the scope of the Meter Data Management System project.

5.4 Implementation Methodology, Scope and Approach

5.4.1 Description and Scope

a) Include a general description of the Bidder's Meter Data Management System offering. Identify key off-the-shelf features/modules and how these compare to offerings from other Bidders.

b) Provide a summary of the proposed scope of the Project. For key gaps that may exist between the Bidder's current capabilities and the proposed project scope, identify the proposed strategies for addressing those gaps (e.g., customization, third-party products, etc.).

5.4.2 Methodology and Approach

5.4.2.1 Describe the Bidder's service delivery methodology and approach for performing the services requested within this RFP.

5.4.2.2 Include a description of each of the key phases for assuming responsibility of the services requested based upon the requirements of this RFP.

5.4.2.3 Include a proposed integrated project plan and schedule for the services requested in this RFP as an attached appendix to the proposal.

5.4.3 In-scope and Out-of-scope

Based on the information provided by The Companies in this RFP, identify all of the elements the Bidder considers in-scope and out-of-scope for this Project. Include a matrix of what is considered in-scope and out-of-scope as an appendix to the proposal.

5.4.4 Proposed Timeline, Key Milestones and Deliverables

5.4.4.1 Identify the proposed timeline, key milestones, and major deliverables associated with providing the consulting and implementation services, assuming a project start date of June 1, 2016.

5.4.4.2 Include a full description of the deliverables, as well as identify the party responsible for completion of each deliverable (i.e. primary responsible).

5.4.4.3 Provide the requested baseline deployment and duration timeline indicated below. Please indicate associated pros and cons for the scenario.

Baseline deployment:

> System implementation in which functionality is staged across phases – targeting base capability first, followed by incremental phased capabilities based on need, risk and maturity. For example, Phase 1 – Register Reads and Interval Data, Phase 2 – Automated Connects/Disconnects, Phase 3 – Interval Billing. It may also be possible to further phase functions by company as well.

5.4.4.4 Provide alternative timeline and schedule based on Bidder experience.

5.4.4.5 Timelines and schedules must be delivered in Microsoft Project 2010. Additional formats for presentation purposes will also be accepted, in accordance with the types listed in Section 2.5.

5.4.5 Acceptance Process

5.4.5.1 The Bidder shall propose the acceptance process and general acceptance criteria The Companies will utilize to measure the quality of deliverables and achievement of milestones.

5.4.5.2 The Bidder shall provide an acknowledgement that its performance will be measured based on The Companies' acceptance of deliverables.

5.4.6 Offshore Capabilities

5.4.6.1 Identify the Bidder's specific capabilities with respect to leveraging low cost offshore resources experienced in Meter Data Management System implementations. Indicate whether the recommended offshore solution would be based upon in-house capabilities or via a third-party alliance or partnership.

5.4.6.2 Identify the specific phases, level of effort, and geographic reach where offshore resources can be utilized. Quantify the potential cost savings associated with the recommendation. Provide examples of specific offshore Meter Data Management System implementation experience within the Electric Utility industry.

5.4.6.3 Indicate how the Bidder will effectively coordinate efforts while maintaining quality of deliverables when engaging and managing offshore resources.

5.4.6.4 Identify the attrition rates for the past three (3) years for the Bidder's various offshore locations and identify the project management approach to maintaining continuity of personnel.

5.4.7 Reuse Knowledge

Describe the Bidder's ability to leverage its internal knowledge base and reuse knowledge capital from prior engagements of a similar nature.

5.4.8 Project Tools and Templates

Based on the Technical Requirements indicated by The Companies, outline the Bidder's experience and capabilities in using the following:

5.4.8.1 Microsoft SharePoint

5.4.8.2 Microsoft Project

Identify all additional tools and templates the Bidder proposes to utilize for reporting, collaboration, performance dashboards, etc. Include best practice templates and accelerators that demonstrate the ability to be innovative, productive and efficient while understanding how to work with The Companies' business culture.

For these additional tools identified, provide an acknowledgement that The Companies will have a perpetual worldwide royalty-free license to use such tools during and upon expiration/termination of the Contract Documents. Please clearly identify any existing and/or on-going licensing, support or maintenance fees.

5.4.9 Internal Knowledge Transfer and Transition

5.4.9.1 Describe the Bidder's approach to internal knowledge transfer and transition management.

5.4.9.2 Describe the Bidder's commitment to maintaining staff/consultant continuity for the duration of the Project. In the event of unplanned turnover, describe the process for managing turnover.

5.4.10 Data Standardization, Cleansing, Conversion, Migration, and Validation

Describe the Bidder's data standardization, cleansing, conversion, migration, and validation approach. Include a description of the methodology and automated tools and techniques for cleansing, conversion, migrating, validating, and maintaining data integrity.

5.4.11 Testing Methodology

5.4.11.1 Describe the Bidder's testing methodology and activities that will be performed.

5.4.11.2 Describe each type of test that will be performed during the course of the Project. Include a description of the key goals, metrics and criteria to be accomplished for each type of test.

5.4.11.3 Provide sample documents for integration test plans, test scenarios/scripts, test cases and test data.

5.4.11.4 Describe the use of the non-production and production environments for testing and how these will be refreshed and managed.

5.4.12 Operational Readiness and Full Dress Rehearsals

Describe the Bidder's approach to operational readiness, how to determine go/no-go criteria, and how full dress rehearsals are performed.

5.4.13 Operational Process Baseline – Pre versus Post Go-Live

Describe which high impact end user processes the Bidder would propose to the baseline and why. Describe the associated metrics and how they will be captured and reported.

5.4.14 Post-Go-Live Support

Describe the Bidder's post go-live support for three (3) to six (6) months following the implementation and identify any associated cost. Detail the expected activities the Bidder will be responsible for.

5.5 Organizational Change Management

5.5.1 Organizational Change Management

5.5.1.1 Describe the Bidder's recommended change management approach for the Project and what materials and experience from prior customer engagements will assist in planning and executing successful OCM activities.

5.5.1.2 Identify the Bidder's change management philosophy, methodology, management framework, and deliverables necessary for organizational change.

5.5.2 Training

5.5.2.1 Training Sessions – Describe the training sessions, duration, and proposed attendees from The Companies for the types of training listed below:

- Functional support training
- Technical support training
- Train the trainer training
- End User training

5.5.2.2 Training Skills And Experience - Describe the skills and experience of the Bidder in terms of the type of training and coaching services provided.

5.5.2.3 Training Methodology - Describe the training methodology, curriculum design, and requirements for training data and training materials.

5.5.2.4 Training Strategy / Timing - Provide a strategy and timing for training of the Project Team, end-users, help-desk personnel and other on-going support personnel (reporting analysts, super-users, etc.). Strategy should address:

- Approach to development & delivery of training to different target groups
- Planned high level training scope
- Delivery mechanisms
- Approach to identifying trainers
- Define training program development process
- Target level of training

- Approach to competency assessment
- Training schedule, along with required training resources, that delivers training at least two (2) months prior to the MDMS go-live date.

5.5.2.5 Training Material - Training material must be available in time for delivery and review by The Companies personnel prior to the training sessions and encompass:

- Baseline technical, functional, and operational training documentation and course materials
- Business Processes and Procedures
- Manuals, quick reference cards for key transactional and process quick reference, etc.
- Material for courses within an approved catalogue

5.5.2.6 Customization - Describe the Bidder's ability to tailor instruction and materials to the specific needs of The Companies. Provide a sample of the type of training material that would be provided.

5.5.2.7 Training Activities - Describe activities associated with training including loading of data, creation of a test environment, train the trainer sessions, etc.

5.5.2.8 Incorporation of Business Process Design into Training - Describe how process steps, flow diagrams, and system transactions will be documented and analyzed to facilitate testing and training. Include a description of business process design sessions to determine process configuration requirements and the system's impacts on business processes.

5.5.2.9 Approach to Training - Describe the Bidder's approach to training. Please propose both options:

Option 1: Bidder shall conduct an initial training and education program which includes all primary, secondary, and casual users.

Option 2: Bidder shall train The Companies' trainers, who will then perform the training and education of the primary, secondary, and casual users.

5.5.3 Approach for Development of Training Materials

Describe the Bidder's approach for development of training materials. Please propose both options:

Option 1: Bidder to develop The Companies' specific training materials.

Option 2: Bidder shall oversee and review the development of The Companies' specific training materials by The Companies' resources.

5.6 Project Management Approach

5.6.1 Project Management Methodology

5.6.1.1 Describe the Bidder's approach to managing this Project. Include insight into the capability to manage this Project, respond to day-to-day problems, manage issues and staff, and supervise and manage resources

5.6.1.2 Describe and provide examples of past project charters used for alignment between the project managers and their executive stakeholders jointly across The Companies and the Bidder. Describe the Bidder's approach for team building and maintaining team focus for long term projects.

5.6.1.3 Describe the Bidder's process controls to be put in place to ensure the work required throughout this engagement is performed to the highest levels.

5.6.1.4 Acknowledge that the Bidder will conform to the EPMO standards and recommend changes that will benefit a project of this scope and size, as needed.

5.6.1.5 Interface with and provide assistance to The Companies staff and its third-party Quality Assurance auditors in order to conduct quality assurance activities on the Project for ensuring the appropriate level of project management rigor.

5.6.1.6 Interface with and provide assistance to The Companies staff and its third-party Systems Integrator (SI) to perform safeguarding throughout the Project's lifecycle to ensure that the implementation results in a quality delivery both from a technical and functional business perspective.

5.6.2 Integrated Project Management Plan

5.6.2.1 Describe and provide examples of the Bidder's standard Integrated Project Management Plan.

5.6.2.2 Describe how the plan is maintained and used to control the Project.

5.6.2.3 Provide examples of a similar project schedule. Ensure that it demonstrates full critical path tracking (no orphan tasks), resource leveling, and baseline controls.

5.6.3 Project Status, Metrics and Reporting

The Companies require Earned Value Management tracking and reporting on this Project.

5.6.3.1 The Bidder will manage and maintain the Bidder's project schedule which will include all resources working for the Bidder. The Bidder shall provide regular periodic (at least weekly) updates to The Companies for the Master schedule. The Bidder shall provide ad-hoc updates upon request by The Companies.

5.6.3.2 The Bidder is required to comply with Earned Value Management (EVM) Activities and will provide the requested inputs to the master schedule that will allow EVM reports to be produced.

5.6.3.3 Describe the Bidder's capability to manage the Project via Earned Value Management. Provide sample reports and requirements. Indicate how reporting will be managed.

5.6.3.4 Provide project status report samples, showing project metrics, and indicate how the Project will be monitored via reporting and dash boarding.

5.6.4 Risk Management

Describe the Bidder's approach to managing, identifying, mitigating and tracking risks. Identify any and all perceived risks associated with this Project and propose an approach to mitigating these risks.

5.6.5 Issues Management

Describe the Bidder's approach to managing, identifying, mitigating and tracking issues.

5.6.6 Project Management Change Control

5.6.6.1 Describe the Bidder's approach to change control and how it aligns with The Companies' expectations as described in Section 3.5.3 for Project Change Control, Scope Chance Control and Contractual Change Control.

5.6.6.2 In the event that any assumptions are incorrect or inaccurate, identify the Bidder's willingness to allocate the resources necessary to meet the Project timeline and delivery requirements at no charge to The Companies and not issue Change Orders based on such incorrect or inaccurate assumptions, unless such inaccuracy is directly attributable to the performance or information provided by The Companies.

5.6.6.3 Identify the Bidder's willingness to provide The Companies with advanced written notification of The Companies' failure to meet its obligations, with such notification in a timeframe that allows The Companies to correct such performance issues prior to requesting a Change Order, including a request for a Change Order seeking relief under any agreed-to financial structure.

5.6.7 Sarbanes-Oxley (SOX) Compliance

The Companies require the Bidder to perform the following services as it relates to SOX Compliance in the Meter Data Management System product as configured and deployed for The Companies:

5.6.7.1 SOX compliance strategy and planning.

5.6.7.2 Provide all software installation, design, and configuration documentation to satisfy all appropriately identified SOX controls requirements with The Companies' involvement.

5.6.7.3 End to end testing and documentation of The Companies SOX controls as related to the project specific info processes.

5.6.7.4 It is expected that the Bidder has a strong understanding of SOX controls configuration in the Meter Data Management System product as configured and deployed for The Companies. This is inclusive of but not limited to the items listed below:

5.6.7.4.1 Identify, develop and configure specific, appropriate and effective SOX controls in project specific info and ensure they operate effectively.

5.6.7.4.2 Identify and develop specific processes and procedures to ensure the SOX controls operate effectively and that evidence is available to support their operating effectiveness.

5.6.7.4.3 Develop and provide appropriate training and training material, and work with change management team to ensure controls are included as part of training curriculum.

5.6.7.4.4 Interface with and provide assistance to The Companies staff and its third-party contractors to ensure SOX compliance, such as providing documentation of project specific SOX related process flows and identified controls based upon the project specific processes, etc.

5.6.7.4.5 Interface with and provide assistance to The Companies staff and its third-party auditors to conduct SOX control evaluations and audits.

5.7 Proposed Project Organization

Details to be provided by the Bidder in separate appendices attached to response.

5.7.1 Project Organization Chart

Provide a proposed project organization chart in an attached appendix.

5.7.2 Roles and Responsibilities (The Companies and Bidder)

5.7.2.1 Identify an overall Project Executive Sponsor, as well as the corresponding subcontractor Executive Sponsors, if applicable, and delineate anticipated roles, responsibilities, and level of involvement.

5.7.2.2 Describe the individual roles and responsibilities that The Companies and the Bidder's personnel, including subcontractors, will assume for this Project as an attached

appendix. Identify the roles, responsibilities, and party responsible, in the format of a detailed Responsible, Accountable, Consulted, and Informed (RACI) matrix.

5.7.2.3 Identify The Companies' resource requirements for each phase of the Bidder's methodology and include recommended qualifications and expertise.

5.7.3 Proposed Bidder Team for this Project

5.7.3.1 Identify the Bidder's proposed team and describe the experience, skills, education, training, qualifications and certifications for each position.

5.7.3.2 Identify the location of the personnel who will be assigned to this Project.

5.7.4 Approve and Remove Resources

Acknowledge The Companies' right to approve and remove resources of the Bidder and any subcontractor Supplier.

5.7.5 Key Personnel

Identify Key Personnel and provide a commitment not to remove such Key Personnel for the duration of the Project.

5.7.6 Subject Matter Experts

Identify when Bidder's subject matter experts will be required to participate on the Project and provide contractual assurances that such individuals will be available as specified in the project schedule.

5.7.7 Resource Transition Period

Acknowledge the Bidder's willingness to provide a three week no cost transition period in the event that Bidder staff or its subcontractor's personnel are removed from the Project.

5.7.8 Work Hours

Identify the Bidder's standard business hours. The Companies require that the Bidder provide adequate coverage throughout the work week. Full time on-site staff is expected to work the same hours as The Companies' staff, unless otherwise approved in advance by The Companies.

5.8 Proposal and Cost Summary

5.8.1 License Fees, Implementation Fees, Training and Staffing Summary

Please provide a summary of the Bidder's identified License Fees, Upgrade and Maintenance costs, implementation hours and fees in the format provided in the summary tab of Appendix E: Detailed Cost and Staffing Model. This provides a high-level cost estimate for the entire Project, including internal cost to The Companies and external Bidder and subcontractor cost for the Project. It is important for The Companies to fully understand the Bidder's costing model such that there are cost levers that can be adjusted as needed, especially in the case of the Hawaii PUC potential requests.

In addition to the costs cited above, pricing for all technical training as described in Section 5.5.2 should be assigned a cost, or multiple costs of providing multiple training options.

5.8.2 Costs and Staff Loading Detail Information

Please complete and include in the proposal the detailed cost and staffing model as provided in the format of the details tab in Appendix E: Detailed Cost and Staffing Model, in order to support the summary estimates. This should cover both the Bidder costs and staffing as well as the recommended costs and staffing for The Companies. It is important for The Companies to fully understand the Bidder's costs and staffing model such that there are cost levers that can be adjusted as needed.

5.8.3 List and Net Resource Rates

5.8.3.1 Include a global "preferred rate card" schedule outlining the list and net rates for all resource categories, including, but not limited to, strategic consulting, process, functional and technical consulting, and onshore and offshore development, by geography/region relative to the anticipated spend level for this opportunity and potential future projects. The rate card should provide additional resource rate consideration as overall spend levels increase. The rate card should also include minimum levels of experience per resource.

5.8.3.2 Provide an acknowledgment that the agreed-to net resource rates will apply to all Change Orders issued under this Project.

5.8.3.3 Provide an acknowledgment that travel time will not be billed and any overtime work will be billed at the negotiated rates, with no additional charge or premium.

5.8.4 Rate Lock/Cap

5.8.4.1 Identify the period of time that the Bidder will lock resource rates to protect against immediate resource rate increases.

5.8.4.2 Identify the annual percentage cap on rate increases The Companies will receive subsequent to such rate lock period.

5.8.4.3 Provide an acknowledgement that the rate lock/cap will apply to all utilized subcontractors.

5.8.4.4 Provide an acknowledgement that the rate lock will apply to future promotions of assigned resources (e.g. continue to bill the promoted resource at the original rate).

5.8.5 Resource Ramp-up

Bidder staff will participate in The Companies' on-boarding for a period of five (5) business days at no charge to The Companies.

5.8.6 Quality Reviews

Identify the Bidder's willingness to provide quality assurance resources to The Companies at no charge for the purpose of conducting quality assurance reviews throughout the various phases of the Project.

5.8.7 Expenses

5.8.7.1 Identify estimated expenses. Include travel, network connectivity, hardware, third-party software, etc. Identify instances where the Bidder will not charge any reimbursable costs. Use The Companies' standard expense policy. Expenses must be preapproved by The Companies and should reflect actual costs. Per diems are not allowed.

5.8.7.2 Identify the Bidder's willingness to limit expenses to an actual not to exceed percentage of the total annual spend for the Meter Data Management System project. Identify the proposed percentage.

5.8.8 Proposed Risk/Gain Sharing Structure

The Bidder shall submit a bid that reflects its preferred approach and philosophy toward fees and risk/gain sharing including possible use of Key Performance Indicators (KPI) for measuring performance (i.e. Time & Materials with not to exceed or fixed, etc.). The Bidder shall also explain additional costs or fees not included in rates and travel expense. If contingency factors are included, please explain in writing.

5.8.9 Technology Consulting Master Services Agreement

Review The Companies agreement provided in **Section 12 – Appendix G.** Identify any exceptions.

5.8.10 Contract Structure

The Companies desire the following contract structure to govern its relationship with its preferred Bidder. Provide the Bidder's acknowledgement to such a structure. The MSA will serve as a master agreement to govern the general relationship between The Companies and the Selected Supplier for the current project and any other future project that The Companies may consider with the Selected Supplier. The MSA will include the legal elements, such as Warranty, Limitation of Liability, Governing Law, Representations and Warranties, Indemnification, Termination, etc. The MSA will take precedence over the MSOW and the MSOW will take precedence over the ISOWs if there is a conflict in the terms and conditions of these documents.

- The Bidder will develop a Master Statement of Work ("MSOW") document to serve as the baseline from which to manage the project. The MSOW should contain details regarding the business arrangement for the entire project, governing all Individual Statements of Work ("ISOW") associated with the project (to be provided for each phase). The MSOW should contain the following:
  - overall Project cost;
  - consulting rates, and associated price protection;
  - expenses, agreed-to price protections, and travel/expense policies;

  - financial structure, including risk sharing;
  - high level project scope (e.g. modules to be implemented, training, development, etc.), timeline and assumptions;
  - staffing chart and estimated overall level of effort for the Bidder and The Companies;
  - change control procedures;
  - acceptance provisions, including minimum testing period, no charge re-performance and The Companies right to re-test;
  - personnel and subcontractor provisions (e.g. right to approve and remove), including prime Bidder obligation; and
  - Executive sponsor(s).

- ISOWs will be created for each phase of the Project. The ISOWs should, at a minimum, include the following:
  - detailed project scope, timeline and criteria for the applicable milestone;
  - definition and description of all deliverables for the applicable phase, including party responsibility and delivery dates;
  - acceptance criteria for deliverables/milestones;
  - estimated fees and associated deliverables/milestone completion dates (with linkage to the risk sharing financial structure);
  - payment schedule with associated deliverables/milestones; and
  - identification of key personnel assigned to Project

5.9 Supplier Capabilities and Experience

5.9.1 References and Related Engagements

Identify and provide details of four (4) recent Meter Data Management System engagements within the Electric Utility industry, occurring within the last five (5) years that are relevant to the objectives and requirements of this RFP. These should be engagements in which the Bidder acted as the Prime Supplier and should be of similar size and complexity to that of The Companies. The details that the Bidder provides should demonstrate the relevancy that the referenced engagements have to the requirements of this RFP and the Bidder's proposed approach. Please date each implementation by completed date.

For each referenced engagement, provide the following details.

Details	(Client 1)	(Client 2)	(Client 3)	(Client 4)

Client Contact Information (Name, telephone, e-mail)				
Client Annual Sales Revenue				
Client Key Business Drivers				
Number of Business Units, Locations and Users				
Role during engagement: Primary or Sub-Contractor				
Duration of Engagement				
MDMS Applications implemented (include release level)				
Number of FTEs				
Planned Cost vs. Actual Cost				
Planned Schedule vs. Actual Schedule				
Contract Type				
Lessons Learned				

5.10 Technology Consulting Master Services Agreement

See Appendix G.

5.11 Bid Documentation Requirements

See Proposal requirements in Section 2.1.

5.12 Listing of All Exceptions

See Proposal requirements in Section 2.6.

Appendices

Include, at a minimum, the following appendices with the proposal. The appendices must provide the specific details of the proposal and afford the highest degree of transparency.

a) In-scope/out-of-scope Service Matrix

b) Completed Functional Requirements Assessment (Appendix C)
MUST BE SUBMITTED IN EXCEL FORMAT; PDF NOT ACCEPTABLE

c) Completed General Technical and Cybersecurity Requirements Assessment (Appendix D)
MUST BE SUBMITTED IN EXCEL FORMAT; PDF NOT ACCEPTABLE

d) Project Schedule
MUST BE SUBMITTED IN MS PROJECT 2010 FORMAT; PDF NOT ACCEPTABLE

e) Project Organization / Governance Chart (The Companies and Bidder)

f) Roles and Responsibilities Matrix (The Companies and Bidder)

g) Detailed Cost Estimate (Appendix E)
MUST BE SUBMITTED IN EXCEL FORMAT; PDF NOT ACCEPTABLE

h) Global Rate Schedule (Appendix E)
MUST BE SUBMITTED IN EXCEL FORMAT; PDF NOT ACCEPTABLE

i) Staff Loading Charts (The Companies and Bidder) in MS Excel (Appendix E)

j) Resumes

k) Draft (Red-lined) Technology Consulting Master Services Agreement (Appendix G)

Appendix A – Intent to Submit Bid Form

Please complete and return via email the following page containing the formal “Intent to Submit Bid Form”.

See electronic file called “Appendix A – Intent to Submit Bid Form.docx”.

INTENT TO SUBMIT BID FORM

Request for Proposal (RFP) # 032715-04

BIDDER must complete this form and return it, either via postal mail to the address stated below, email, or via FAX to the number provided, no later than Tuesday April 14th, 2015.

If no proposal will be submitted, then the reason must be indicated by completing the requested data below. In addition, the inquiry documents must be returned with the completed form.

Failure to comply may render the supplier ineligible for future solicitations for the type of material(s) or service(s) involved.

Mail or FAX completed form to:

Hawaiian Electric Co., Inc.
P.O. Box 2750
Honolulu, HI 96840-0001
Attention: Toni Mitobe-Shuster, Purchasing Contract Manager

E-Mail: smartgridrfp@hawaiianelectric.com
E-FAX: (808) 203-1157
Phone: (808) 543-5694

Receipt of Request for Quotation No. 032714-04 covering:
Smart Grid Meter Data Management System

A) Receipt of Request for Quotation is hereby acknowledged and we ( ) will, ( ) will not, submit a proposal on or before the due date specified.

If a proposal will not be submitted, then check or complete the following as applicable:

a. ( ) Cannot comply with specifications or scope of work.
b. ( ) Cannot meet delivery or performance requirement.
c. ( ) Do not currently manufacture or sell the type of item(s) or service(s) involved.
d. ( ) Other: _____
e. We ( ) do, ( ) do not, desire to be considered for future solicitations for the type of item(s) or service(s) involved.

Name, address (include zip code) and telephone number (include area code) of firm:

Company Name: _____
Address: _____
_____
_____
_____

Representative Name: _____
Position/Title: _____
Phone Number: _____
FAX Number: _____
Electronic Mail Address: _____
Signature _____ Date _____

Appendix B – Glossary

Term	Definition
Advanced Distribution Management System (ADMS)	The Advanced Distribution Management System (ADMS) application provides a centralized platform for operators to leverage multiple smart grid systems and capabilities
Advanced Metering Infrastructure (AMI)	The hardware and software, together with the telecommunications services, that enables automated meter reading and other capabilities.
(The) Companies	Hawaiian Electric Company, Inc., Maui Electric Company, Ltd. and Hawai'i Electric Light Company, Inc.
Configuration	Configuration of software functionality by establishing, entering, or resetting parameters.
Consultant	A person or agency employed to provide expert or professional advice to The Companies
Contract Documents	The documents that will govern the services to be delivered under this RFP shall consist of the provisions set forth in the Master Agreement, the applicable work authorization(s), and the statements of work describing specific services to be provided to The Companies incorporated into the applicable work authorization, and all exhibits attached to or incorporated into the foregoing (collectively, the Contract Documents).
Customer Facing Solutions (CFS)	Customer Facing Solutions allows customers to access their private, personal energy consumption. They can view detailed information about their energy usage, estimate their monthly usage, and receive tips for decreasing their energy consumption.
Deliverable(s)	A formal product(s) or service(s) provided during the project that is subject to The Companies' approval and/or is required by the specific methodology employed during the project.
Distribution Automation (DA)	An application that quickly detects and isolates outages and service interruptions, thus enabling restoration crews to efficiently restore power.

ESB	An enterprise service bus (ESB) is a software architecture for middleware that provides fundamental services for more complex architectures, such as providing a mechanism that manages access to applications and services (especially legacy versions) to present a single, simple, and consistent interface to end-users via Web- or forms-based client-side front ends.
Earned Value Management (EVM)	A method for measuring project performance. It indicates how much of the budget should have been spent, in view of the amount of work done so far and the baseline cost for the task, assignment, or resources.
Expert	One who is knowledgeable in a specialized field, based on specific knowledge, education, training, and experience.
"Go/No-Go" Criteria	Event outcomes/results which are determinative of whether or not to continue or suspend the process.
Information Assurance (IA)	Information assurance (IA) is the practice of assuring information and managing risks related to the use, processing, storage, and transmission of information or data and the systems and processes used for those purposes.
ITS or IT	The Companies' Information Technology and Services Department.
Meter Data Management System (MDMS)	A meter data management system (MDMS) collects and stores meter data from a head-end system and processes that meter data into information that can be used by other utility applications including billing, customer information systems, and outage management systems.
Milestone	Reference points denoting major events during the course of a project which are used to monitor the progress of a project.
Prepay System	An application where electricity customers are able to pay for their usage on a daily basis (as compared to the traditional method of a monthly billing). Prepay allows a customer to have electricity service without placing an initial deposit.
Production Environment	Where the environment is such that the Meter Data Management System solution is in full operation as used by The Companies in the normal course of conducting business.
Project Contract	The Companies' Standard Form Agreement approved by HAWAIIAN ELECTRIC's Legal Department

Project Plan or Work plan	The detailed list of tasks to be accomplished by the Bidder to complete the Meter Data Management System project, the timelines for commencement and completion and specific Bidder Personnel responsible for each task.
Proposal Due Date	The data and time by which the Bidder's proposal must be received in order to be considered by The Companies.
Report	A formatted and organized presentation of data commonly used in the industry (meets industry standards) which presents specific focused content.
Silver Springs Network (SSN)	An industry leader in smart grid technology, who for more than a decade, has implemented their smart grid mesh technology that currently serves over 17 million homes and businesses for more than 30 utilities.
User Acceptance Test	An evaluation of the total solution which assures end users that such solution to be placed in operational use is acceptable.
Usability	The ability to use the solution technically and functionally
Volt/VAR Optimization (VVO)	An application that uses voltage data collected by AMI at customer sites. VVO enables The Companies' operators to safely and more precisely control voltages, resulting in saved energy, less carbon dioxide emissions, and lower customer bills. VVO minimizes voltage loss on the distribution circuits and increases the efficient operation of customer appliances.

Appendix C – Functional and Technical Requirements

Appendix C contains an electronic file of the Functional and Technical Requirements specific for the MDMS. It is important for Bidders to fully read, understand and respond to the items in this document as per instructions indicated in the "INSTRUCTIONS" tab. The completed spreadsheet is required to be returned in electronic form with the Bidder's proposal response.

It is also important for Bidders to understand that the requirements requested span a large and broad set of capabilities by which The Companies are looking to learn and understand not only what may be possible in its proposed implementation of the MDMS, but also to gain insight into the future state and intents of the product. Some requirements may not be met today while others are planned for in the future. Bidders should clearly understand the four categories for requirements and how the six levels of responses are used in combination to determine the overall strength of the vendor product/offering. It does not mean that ALL requirements will be implemented at once, nor is it a requirement for Bidders to meet ALL categories of requirements in order to submit a proposal.

See electronic file called "Appendix C – Functional and Technical Requirements.xlsm".

Hawaiian Electric Technical Requirements Questionnaire

Smart Grid Meter Data Management System (MDMS)

Vendor Name:	XYZ, Inc.
Project:	Smart Grid Meter Data Management System (MDMS)
Date Questionnaire Released:	
Date Questionnaire Due:	
e of Last Assessment Ratings Added by HE:	

Req#	Technical Information Requested
1.00	**General Technical Operational Information**
1.17	Describe your methods for automatically archiving and/or purging data based on user-configured rules
2.00	**Software Upgrade Information**
2.10	Please specify for each system module (if applicable), the average and maximum number of outages needed to:
2.10.05	a. Apply patches
2.10.10	b. upgrade to a new version
2.15	Please specify for each system module (if applicable), the average and maximum duration of outages needed to:
2.15.05	a. Apply patches
2.15.10	b. upgrade to a new version
2.17	Please specify for each system module (if applicable), whether server reboot is required to:
2.17.05	a. Apply patches
2.17.10	b. upgrade to a new version
2.20	Please specify your upgrade strategy for patch and new version for the following:
2.20.05	1. Operating System (e.g. IBM AIX, Windows Vn and newer, Windows service packs)
2.20.10	2. Database (e.g. Oracle)
2.20.15	3. Microsoft Internet Explorer/support web browsers
2.20.20	4. Third party products used by the MDMS
2.25	How frequently do you have software updates and how many prior versions do you support at any given time?
2.27	Describe your process for issuing emergency patches (i.e. critical security patches such as for Heartbleed)
2.30	Describe your process for maintaining currency with any external software (e.g. MS Word, MS Excel, web browsers, operating systems, and database)
2.35	Please specify your application software release and version upgrades schedule
2.40	Please specify the average and maximum number of outages, based on existing installations of the MDMS, for the following: (assumes n-tier product)
2.40.05	a. Apply patches
2.40.10	b. upgrade to a new version
2.50	Please specify the average and maximum duration of outages, based on existing installations of the MDMS, to apply patches and upgrade to a new version for each of the following tiers (assume n-tier product):
2.50.05	• Client Tier
2.50.05.05	a. Apply patches
2.50.05.10	b. upgrade to a new version
2.50.10	• Presentation Tier
2.50.10.05	a. Apply patches
2.50.10.10	b. upgrade to a new version
2.50.15	• Business Rules Tier
2.50.15.05	a. Apply patches
2.50.15.10	b. upgrade to a new version
2.50.20	• Data Tier
2.50.20.05	a. Apply patches
2.50.20.10	b. upgrade to a new version

2.60	Describe the size and nature of the data transactions including the volume, timing, and duration of the data being transmitted to and from:
2.60.05	a. The various end-user types: Operators, Super Users, Administrators, etc.
2.60.10	b. Between HECO Systems and your system e.g. CIS (e.g. SAP-CIS), SSN AMI Head-End, ADMS (TBD), etc.
2.65	Describe the methods typically used by your customers (other installations) to secure data transactions described in 2.60
3.00	**Client Software Information**
3.05	What "client" software (and associated versions), if any, would be required for end-users?
3.07	What are the Hard Drive, CPU, RAM and Monitor/Display recommendations?
3.10	Describe how end users connect to the application (i.e. HECO Desktops, Wireless LAN, Mobile Wireless, Remote/Non HECO Locations, Internet)
5.00	**Configuration Information**
5.05	Define the term configuration as it relates to your software solution.
5.10	Describe your software configuration process.
5.12	Describe your sofware configuration management practices (SCM)
5.14	Describe your process for migrating configuration management changes across environments
5.15	Based on past implementations, what types and amount of configuration would you expect HECO to need?
5.20	Does configuration impact future software upgrades for HECO, e.g., how will HECO-specific forms, reports, and user defined fields impact upgrades?
6.00	**Customization Information**
6.05	Define the term customization as it relates to your software solution.
6.10	Describe your software customization process, including software programming language used for custom code (e.g., JAVA, C#)
6.15	Describe your sofware configuration management practices (SCM)
6.20	Describe your process for migrating configuration management changes across environments
6.25	Based on past implementations, what types and amount of customization would you expect HECO to need?
6.30	How does customization impact future software upgrades for HECO, e.g., how will HECO-specific forms, reports, user defined fields impact upgrades?
6.35	Describe which software modules need to be developed to meet our business requirements and interfaces
6.40	Describe the deployment schedule for any software modules that need to be developed to meet our business requirements
7.00	**Software Compatibility Information**
7.05	Describe what 3rd party software packages/systems/modules (and associated versions) will be required by your solution, and if they will require separate licensing, configuration, installation, etc. Please list details
7.10	Describe your process and past performance in maintaining compatibility with SAP
7.15	Are you a certified partner of SAP?
7.20	Describe how your application has been implemented with SAP
7.25	Describe your process and past performance in maintaining compatibility with external software products (e.g. Oracle, Microsoft Office, Microsoft Windows, Microsoft Internet Explorer, JAVA, McAfee, etc.).
7.30	Describe how your MDMS application has been implemented in a stand-alone fashion
7.35	Describe the methods in which your product can be delivered (e.g. on- and off-premise (i.e. SaaS), cloud-based, host-based, managed services, etc)
8.00	**Potential Issues**
8.05	Describe any major issues you foresee that will affect the implementation and operation of your software. Describe remediation steps.
12.00	**Data Migration Tools and Methodology Information**
12.05	What data migration tools and templates do you provide to assist with initial and ongoing data transfer?

12.10	Describe your methods for data cleansing and validation, both for initial data population and ongoing data transfer
12.10.05	Describe your approach for securing data cleansing and validation processes
14.00	**Performance Information**
14.75	Please provide your ability to scale your system in terms of number of concurrent users, number of meters supported, launch time, response time, etc (historical performance metrics from existing installations, as well as documented results of performance testing including the execution platform)
14.90	Please specify the average and maximum Mean Time Between Failures (MTBF) and Mean Time To Recover (MTTR) values, for existing installations of the Pre-pay Syste , for each tier, on the following measures:
14.90.05	• Client Tier
14.90.05.05	a. Mean Time Between Failures (MTBF)
14.90.05.10	b. Mean Time To Recover (MTTR)
14.90.10	• Presentation Tier
14.90.10.05	a. Mean Time Between Failures (MTBF)
14.90.10.10	b. Mean Time To Recover (MTTR)
14.90.15	• Business Rules Tier
14.90.15.05	a. Mean Time Between Failures (MTBF)
14.90.15.10	b. Mean Time To Recover (MTTR)
14.90.20	• Data Tier
14.90.20.05	a. Mean Time Between Failures (MTBF)
14.90.20.10	b. Mean Time To Recover (MTTR)
14.92	Describe if the application will require uploads or downloads of data from end points to central servers (i.e. the size of the upload/download, frequency, and time of day).
14.93	Describe in detail the type of master data that must be stored in your system to operate it as well as approach and frequency of synchronization
14.95	Describe the size and nature of the data transactions including the volume, timing, and duration of the data being transmitted to and from other HECO Systems and the MDMS application, broken down by System type, (e.g. SAP CIS, SSN AMI Head-end system, Demand Response Management System, Advanced Device Management System, etc.
14.97	Describe the size and nature of the data transactions including the volume, timing, and duration of the data being transmitted to and from other HECO Systems and the MDMS application, broken down by user type (i.e. Operator, Administrator) if the network load profile is different. (i.e. for each type of network user, what is maximum and average network load)
14.99	For each type of network traffic, describe network protocol, port, load profile, etc
15.00	**High Availability Information**
15.05	Provide a description of how your proposed system architecture would work in a local highly available architecture.
15.10	Please describe the organization required to operate the MDMS, including any critical roles, staffing requirements and associated job descriptions. In particular, please describe as detailed as possible the likely organizational setup for an organization such as HECO.
15.20	Provide a description of how your proposed system architecture would work in a geographical failover scenario (with multiple "local" (Waiau) and mainland (Georgia) locations).
16.00	**Data Integrity Information**
16.20	Describe how the MDMS system will ensure that appropriate dialogues would be included to identify user, system and processing errors (e.g. validates as data is entered/received, prohibits entry of invalid data/characters (i.e. numeric fields only allow numbers to be entered, valid date formats required, etc)
17.00	**Integration Information**
17.15	The MDMS shall provide the ability to interface with various other HECO systems through standard interfaces. Please specify the following information for the available interfaces:
17.15.05	a. Interfaces that are part of the core system

17.15.10	b. Interfaces that are plug-ins
17.15.15	c. Third party interfaces supported
17.15.20	d. Costs associated with each interface (if any) provide it in Appendix E – Detailed Cost and Staffing Model
17.15.25	e. Maintenance and upgrades provided for each interface (if needed)
17.15.30	f. Support for the following activities:
17.15.30.05	o Installation
17.15.30.10	o Configuration
17.15.30.12	o Customization
17.15.30.15	o Troubleshooting, etc.
18.00	**Software Documentation Information**
18.90	Describe or document all third party applications included with the MDMS.
19.00	**Assumptions**
19.05	Provide a consolidated list of the assumptions you have made in your response.

Appendix D – General Technology and Cybersecurity Requirements

Appendix D contains general technology, cybersecurity and privacy requirements that are applied across all technologies employed at The Companies. These represent the specific compliance requirements that need to be met in order to maintain the required standards at The Companies. Bidders are required to complete the spreadsheet per instructions on the "INSTRUCTIONS" tab and return the electronic file with the Bidder's proposal response.

See electronic file called "Appendix D – General Technology and Cybersecurity Requirements.xlsx".

Hawaiian Electric Technology Assessment Questionnaire Project name		Vendor Response Options XYZ, Inc.
Vendor Name:	XYZ, Inc.	Spreadsheet Template Version is:
Project:	Project name	
Date Questionnaire Released:	03/27/15	1.0 as of 09/23/2014
Date Questionnaire Due:	04/24/15	
Date of Last Assessment Ratings Added by HE:		

Information Only / Ideal / Core / Mandatory	Hawaiian Electric Technology Standards	Enter the numeric value "1" (not text) as the flag values in the yellow highlighted response options. Do not flag more than 1 (one) box per row. Use Grouping controls on far left side of this spreadsheet to fully open all text and response options. Use beige areas in expanded rows to enter any desired hyperlinks or additional explanation text.	System as Proposed Meets Standard	System will meet standard in scheduled upcoming release	System can meet standard using 3rd Party products	System can meet standard with customization	System as proposed does not meet standard	Other
	Data and Database Architecture							
	Data Architecture (or Data Object Architecture)		Meets	Will	3rd P	Cust	No	Other
	1 ***Data Object Model***							
		Vendors may add any hyperlink to right:						
	Standard: System shall access data through a data object rather than directly from the DB. **Comment:** Object models typically offer a higher level 'name based' form of access to data in a DB. When applications utilize a data object model, the data is normally better formulated and allows for easier name based data mapping (at the object model level vs. at the field level in the DB tables). **Preference:** No products specifically preferred. **Desired Feedback:** System providers should describe whether the application uses a data object model and whether the model provides an easy way to perform object model mapping.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	1 ***Logical Data Model***							
		Vendors may add any hyperlink to right:						
	Standard: Logical data model(s) shall be available and aligned with project and enterprise requirements. **Comment:** HE desires that systems provide a logical data model AND that the attributes of the model be capable of integration into a Data Modeler. **Preference:** No products specifically preferred. **Desired Feedback:** System providers shall indicate whether they have a logical data model and whether it can be provided or made available for review.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	1 ***Physical Data Model***							
		Vendors may add any hyperlink to right:						
	Standard: Physical data model(s) shall be available and aligned with project and enterprise requirements. **Comment:** HE desires that systems provide a physical data model and that attributes of the modeled data to be capable of integration into a Data Modeler. **Preference:** No products specifically preferred. **Desired Feedback: S**ystem providers shall describe their physical data structure and whether it is represented in a model, whether the model is available for use or review and what tools can be used with the physical data model.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	Data Management		Meets	Will	3rd P	Cust	No	Other
	1 ***Data Access Utility***							
		Vendors may add any hyperlink to right:						
	Standard: System shall include a data access utility that can be used to directly manage the data (business) object. **Comment:** The ability to perform basic data access/edits (e.g. data viewing, simple table editing) shall be provided through a data access utility included as part of the system/application. The utility shall access the data through the data object and shall also incorporate the business rules for data edits. (Note: This is not the same as use of a general third party SQL access tool. In general, data shall not be edited directly through use of such general DB tools. However a system provider provided utility which adheres to the system provider's data edit rules is helpful for data repair such switching a flag in the DB directly.)	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						

					Preference: No products specifically preferred. **Desired Feedback:** System providers shall provide description of capabilities.												
		1			***Data Import/Export Support***												
Information Only	Ideal	Core	Mandatory			Vendors may add any hyperlink to right:											
					Standard: System shall include built-in data import/export utilities. **Comment:** Package applications shall provide out-of-the box data import/export capabilities. Such input might be accomplished via CSV, spreadsheet or other common formats. Import/export features shall use the data object (see above) to assist with proper data edits. This type of utility enables more flexible automated processes for performing data entry. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe the input/export support and indicate if its application uses a data object model. As a plus, the system provider shall provide a way to use object model mapping.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
		1			***Extract/Transfer/Load (ETL) Capability***												
Information Only	Ideal	Core	Mandatory			Vendors may add any hyperlink to right:											
					Standard: System shall support ETL capabilities directly or via close integration with other common ETL tools. **Comment:** Extract/Transfer/Load (ETL) is a potentially important capability for enabling HE to share data across platforms and across different DBs for Data Warehouse (Business Intelligence (BI)) reporting and for the potential use of one application's data by a different application. **Preference:** MS SQL Server SSIS or SAP Data Services. **Desired Feedback:** If system has incorporated ETL capabilities into its package, such capabilities shall be described by the system provider and shall be counted as a plus.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
		1			***Adherence to Data Labeling and Handling Requirements***												
Information Only	Ideal	Core	Mandatory			Vendors may add any hyperlink to right:											
					Standard: System shall allow for designating levels of confidentiality to be associated with data fields such that data users can readily comply with the Data Labeling and Handling Requirements. **Comment:** HE has specific data handling and labeling requirements associated with particular forms of confidential information. It is important that new systems or applications introduced into the HE environment allow for such confidential data to be identified and that printed reports be flagged and labeled when confidential information appears in the reports. **Preference:** Support the following data classifications: Public – information made readily available to the public; Internal Use – information for internal use within the Company by all employees and authorized Third Parties; Confidential – sensitive information for authorized employees and Third Parties who have a need-to-know; Confidential – Restricted Distribution – highly sensitive information whose distribution must be carefully controlled. **Desired Feedback:** System provider shall review the Data Labeling and Handling Requirements and assess whether data in system can be properly identified to meet the requirements.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
Web Content Management Architecture													Meets	Will	3rd P	Cust	No	Other
		1			***Web Data Management Utility***												
Information Only	Ideal	Core	Mandatory			Vendors may add any hyperlink to right:											
					Standard: System dealing with web data shall either have or integrate with a utility to easily add, edit or remove data that are presented or collected on-line. **Comment:** Well designed on-line web applications shall be data driven (rather than manually managing static pages). A built-in data management utility shall provide HE an interface to add, edit and remove data that will be presented online. Automation of that interface is important. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe out of box capabilities regarding data management services.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
		1			***Web Content Management Utility***												
						Vendors may add any hyperlink to right:											

Information Only	Ideal	Core	Mandatory	**Standard:** System dealing with web content shall either have or integrate with a utility to easily manage or update the web content. **Comment:** Web content includes images, style sheets, multimedia files, etc. that typically do not come from the DB but rather from other file systems. Applications involved in presenting such content on the web should have powerful utilities for organizing, versioning, changing and updating content. **Preference:** Integration with Ingeniux externally, SharePoint 2013 internally. **Desired Feedback:** System provider shall provide capabilities regarding out of box web content management tools or integration with other standard tools.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
Database Architecture								Meets	Will	3rd P	Cust	No	Other
		1		***ODBC Compliance***									
Information Only	Ideal	Core	Mandatory	**Standard:** System Database shall be ODBC compliant. **Comment:** The database shall be able to be registered as an ODBC data source, allowing custom applications to access the data through the ODBC layer. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall certify ODBC compliance.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant							
		1		***JDBC Compliance***									
Information Only	Ideal	Core	Mandatory	**Standard:** System Database shall be JDBC compliant. **Comment:** JDBC compliance is somewhat less important in many situations, but may be required in certain situations and shall always be noted if it exists. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall indicate whether data base is JDBC compliant.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant							
	1			***OLEDB Compliance***									
Information Only	Ideal	Core	Mandatory	**Standard:** System Database should be OLEDB compliant. **Comment:** The database should provide an application programming interface employing the Common Object Model, according to OLEDB standards. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should indicate whether data base is OLEDB compliant.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant							
		1		***SQL Data Access Compliance***									
Information Only	Ideal	Core	Mandatory	**Standard:** System database shall be able to accommodate and respond properly to standard SQL queries run against the database. **Comment:** The database shall be accessible not only from the package application interface, but shall also allow data extraction via standard SQL. This would mean that data can be extracted via a standard SQL based tool directly from the database. **Preference:** Oracle / MS SQL language compliance preferred. **Desired Feedback:** System provider shall verify that the database is SQL compliant.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
	1			***Use of HE Standard Database***									
Information Only	Ideal	Core	Mandatory	**Standard:** System operates using MS SQL Server 2012 for non-enterprise scale systems or Oracle XI (or newer) for Enterprise-scale applications. **Comment:** HE prefers to standardize its database technology around MS SQL or Oracle 64 bit versions. **Preference:** MS SQL Server 2012 or Oracle XI (or newer). **Desired Feedback:** System provider should certify that system operates on specified databases.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
1				***Use of Alternate Databases***									
					Vendors may add any hyperlink to right:								

Information Only / Ideal / Core / Mandatory			
	Standard: Systems may support other types of non-SQL databases (Hana, Hadoop, other No SQL databases). **Comment:** HE acknowledges that large-scale data may require alternate database types to address performance and volume. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should provide information about the other types of supported databases.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	

Application Architecture

Development Environment

					Meets	Will	3rd P	Cust	No	Other
		1		***Mainstream Integrated Development Environment***						
Information Only	Ideal	Core	Mandatory	Vendors may add any hyperlink to right:						
				Standard: Systems developed or maintained within HE shall allow development or maintenance work to be performed using a mainstream Integrated Development Environment (IDE). **Comment:** Many software packages can be customized using an industry mainstream IDE such as MS Visual Studio, Eclipse, WebSphere Visual Studio, etc. HE prefers applications that can be maintained using a mainstream, industry standard IDE with MS Visual Studio or Eclipse. **Preference:** MS Visual Studio - .Net, Eclipse for Java, SAP Workbench for SAP ABAP Development. For Source repository, we prefer MS Team Foundation Server for .Net, and CA Harvest for non-.Net. **Desired Feedback:** System provider shall indicate whether the system can be maintained using one of the industry standard development environments.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Programmatic Interface for Accessing/Modifying System Information.***						
Information Only	Ideal	Core	Mandatory	Vendors may add any hyperlink to right:						
				Standard: System shall provide an organized, programmatic interface or system development kit (SDK) to perform any system configuration or to access/modify system information or accounts. **Comment:** HE seeks to avoid systems that do not organize their configuration interfaces and make access to system information obtuse. Interfaces shall be documented and consolidated to logical screen groupings in order to make adjustments easy. **Preference:** Product shall provide a native SDK. **Desired Feedback:** System provider shall indicate whether system can be configured and maintained using pre-packaged screens with modern interfaces.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Mainstream Development Language***						
Information Only	Ideal	Core	Mandatory	Vendors may add any hyperlink to right:						
				Standard: Any user configurable or exposed development language used for product customization and maintenance shall be based on one of the following: .Net, Java, or ABAP. **Comment:** HE seeks to avoid use of highly proprietary languages for which programming resources are rare and difficult to acquire. System shall use mainstream languages and technologies. **Preference:** Preference is .Net, Java, ABAP. **Desired Feedback:** System provider shall indicate whether system can be programmed and maintained in one of the above designated mainstream languages.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Programming Model***						
Information Only	Ideal	Core	Mandatory	Vendors may add any hyperlink to right:						
				Standard: System/application shall be based on a modern development technology framework such as .Net, ASP.Net, Java EE, or Java Server pages (JSP). **Comment:** HE seeks to work within modern, web oriented frameworks that employ well established interoperability standards, are industry standard and support a Services Oriented Architecture approach. **Preference:** Preference is .Net, Java, ABAP. **Desired Feedback:** System provider shall indicate what, if any, programming model the system is based upon.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	1			***Use of Plain Text Configuration or GUI Configuration***						
Information Only	Ideal	Core	Mandatory	Vendors may add any hyperlink to right:						
				Standard: System customization and other configuration files available to HE developers should make source content available as plain text or through a GUI interface. **Comment:** Manipulation of configurable system data by HE programmers should not require that the HE programmers have to interpret the formatting of configuration files.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors						

				Preference: No products specifically preferred. **Desired Feedback:** System provider should indicate if system configuration information can be accessed and manipulated as plain text or thru GUI for review, development or customization purposes.	Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Preservation of Customization***								
Information Only	Ideal	Core	Mandatory	**Standard:** System shall allow for the preservation of prior customizations during product upgrades. **Comment:** When software packages are upgraded, the ability (or inability) to preserve customizations created within older versions can dramatically impact the feasibility and the cost of the upgrade. Applications that provide specific provisions for creating customizations that are upgradeable can help bridge this issue. Typically, these applications may require that customizations be performed using a specific toolset provided by vendor. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall indicate if system has provisions for preserving customizations against breakage during upgrades, what approach is used and how extensive the protection may be.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
Training and Progression of Environment						Meets	Will	3rd P	Cust	No	Other	
		1		***Testing Cycles***								
Information Only	Ideal	Core	Mandatory	**Standard:** System (under its proposed licensing provisions) shall allow for all of the following testing cycles to be performed: Unit Testing, Integration Testing, System/Functional Testing, End-to-End Testing, Performance Testing and Operational Readiness Testing. **Comment:** The choice of what testing cycles shall be performed is essentially an implementation issue, but the system itself shall not preclude any of the cycles from being exercised. The current standard only requires that the system be capable of being tested via each stage. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe any testing cycle provisions and shall further address whether those provisions can be supported by the product.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Developer Testing Framework***								
Information Only	Ideal	Core	Mandatory	**Standard:** System shall allow for the use of a Testing tool for development and defect fix test management. **Comment:** Testing development or customization changes as well as defect fixes must be managed to assure the proper migration of changes from the test to the production environment. HE requires that such changes be managed to assure that changes are fully tested, accepted and properly released for larger testing. **Preference:** Preference is to leverage IDE identified above. **Desired Feedback:** System provider shall describe Unit Testing provisions and shall further address whether those provisions can be managed by the preferred IDE.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***User & Performance Testing Framework***								
Information Only	Ideal	Core	Mandatory	**Standard:** System shall allow for the use of a Testing tool for test case development, automation, and tie to defect management software. Also, this shall include performance testing capabilities. **Comment:** Testing development or customization changes as well as defect fixes must be managed to assure the proper migration of changes from the test to the production environment. HE requires that such changes be managed to assure that changes are fully tested, accepted and properly placed into production. **Preference:** Preference is HPQC/Loadrunner. **Desired Feedback:** System provider shall describe Unit Testing provisions and shall further address whether those provisions can be managed by HPQC/Loadrunner.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Change and Defect Management***								
					Vendors may add any hyperlink to right:							

Information Only	Ideal	Core	Mandatory	**Standard:** System shall allow for the use of automated change management and defect tracking. **Comment:** The tracking of custom changes and defect fixes are important and systems within HE shall allow those issues to be tracked from the time that an issue is defined until the subsequent adjustment is designed, developed, tested, accepted, placed into production and successfully used for a period of time. **Preference:** End User Discovered Post-go-live bugs: Service Now Developers & Release testing: SAP - Solution Mgr, Visual Studio Team Foundation Server, HPQC **Desired Feedback:** System provider shall indicate if a change and defect management system is used.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Enablement and Use of Event Logs for Error Tracking and Debugging***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System shall provide for easy use of log files to track events during testing or debugging operations. **Comment:** The support for the system testing shall include generous use of event logs to record system conditions, messages, logical status and events during testing or debugging. Logs shall allow for optional, progressive disablement during normal operations. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall indicate the extent and use of system log capabilities.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Multiple Separate but Consistent Environments***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System (under its proposed licensing provisions) can be configured and sized to support multiple environments (including development, staging, and training) that fully emulate the production environment including connectivity to other key systems. **Comment:** The separate environments shall be configurable to have the same functionality as the production environment to assure that processes created in these non-production environments will operate in the production environment as originally developed. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe provisions for establishing separate environments and its configuration and deployment alignment with the production environment.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	1			***Use of Virtual Server Environment for Multiple Environments***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System (under its proposed licensing provisions) should allow for the hosting of development, staging, or training versions/implementations of the system on Virtual Server. Implementations of the system should be capable of being loaded on an instance a virtual server for fundamental development, testing or training purposes and should behave on a virtual server consistent with behavior on a dedicated server. **Preference:** VMWare or AIX-based virtualization (LPAR). **Desired Feedback:** System provider should indicate if systems support virtualization.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Straightforward Production Deployment***							
					Vendors may add any hyperlink to right:						
nformation Only	Ideal	Core	Mandatory	**Standard:** System can be deployed from a Test to Production environment by straightforward alteration of path names and connections using executable or msi and/or batch files. **Comment:** The system shall not require any fundamental re-configuration to deploy from test to production. The movement of code or the updating of connections and the loading of current data shall be the only major technical elements of final production deployment. These shall be accomplished via the use of HEs Operational Team Deploy with no required intervention from the system provider.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						

				Preference: No products specifically preferred. **Desired Feedback:** System provider shall indicate if deployment can be accomplished with no fundamental reconfiguration other than connectivity and data updates or movement of tested code to the production system.								
		1		***Version Consistency among Environments***								
Information Only	Ideal	Core	Mandatory	**Standard:** New system releases can be managed in way that allows for easy and straight forward version control to be maintained consistently among all environments. **Comment:** Patch and upgrade procedures shall allow for the consistent application of system updates to all environments without undue difficulty. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall indicate how updates are applied to include all relevant environments including a description of tools and processes required.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
Componentization and Service Oriented Architecture (SOA) Support						Meets	Will	3rd P	Cust	No	Other
		1		***N-Tier Application Architecture***								
Information Only	Ideal	Core	Mandatory	**Standard:** System shall employ use of application development tiers to separate major functions or layers. Systems must use at least 3-tiers (database, application, client), but may use more than that. **Comment:** Beyond the simple separation of application from data, the system uses a well defined tier approach to separating major services including separation of the presentation layer from the application layer, separation of web server components from application components as well as providing separate security administration, separate report and print services, etc. See these requirements for related information: Network Security Zones; Data Tier Separation; Segregation of Reporting Services; and Substantial to Full Separation of the Presentation Layer. Each Tier will be in its own security zone. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe the tier architecture of the system and describe the separation and integration methods for defining tiers.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
			1	***Data Tier Separation***								
Information Only	Ideal	Core	Mandatory	**Standard:** Data shall be stored in a separate tier distinct from other aspects of the application architecture. **Comment:** 3-tier to 'n' tier technologies allow more flexible solutions and allow the application to be scaled up to meet higher load levels. At a 3-tier minimum, a separated data tier compliant with the Modeling View Controller (MVC) design pattern is a widely accepted implementation of the standard. If the data is not stored to meet this guideline, the integration, maintenance and reporting functions associated with the application can be problematic. **Preference:** Data to be stored in a database. **Desired Feedback:** If system does not meet this standard, what type of data storage approach is used?	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***No Storage/ Maintenance of Data on Web Servers***								
Information Only	Ideal	Core	Mandatory	**Standard:** Beyond the separation of data from the application, the system shall specifically avoid storing (other than very short term caching) of any 'content' information on web servers. **Comment:** No application or system content information shall ever be stored on a web server as part of an on-going data storage arrangement or strategy. Any temporary cache data must also meet HE standards regarding encryption of data outside a HE firewall. **Preference:** Data to be stored in SQL DB behind Firewall. **Desired Feedback:** If system does not meet this standard, describe what type of data storage is maintained at the web server level.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Segregation of Reporting Services***								
					Vendors may add any hyperlink to right:							

Information Only	Ideal	Core	Mandatory	**Standard:** System shall support the segregation of reporting functionality so as to allow use of mainstream external tools for generating reports from the data. **Comment:** Consistent with the n-tier architecture approach, HE prefers systems or applications architected to allow third party reporting tools such as SAP Business Objects to be used in developing reports from the data. **Preference:** Preference for SAP Business Objects. **Desired Feedback:** If system does not meet this standard, what type of data reporting approach is used? If compliant version is planned, provide any information on release date and form of compliance.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
		1		***Substantial to Full Separation of the Presentation Layer***										
					Vendors may add any hyperlink to right:									
Information Only	Ideal	Core	Mandatory	**Standard:** System shall employ substantial to full separation of the presentation layer from the application layer. **Comment:** Consistent with the n-tier architecture approach, HE prefers systems or applications architected to allow alternative presentation options such as fat vs. thin client options without affecting fundamental system functionality. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall indicate whether the system has multiple presentation modes or whether it allows the presentation mode to be upgraded separately from the application logic. If system does not meet this standard, what options for altering the presentation mode/layer exist? Is the system tied to a particular presentation mode?	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
	1			***Application Function Componentization***										
					Vendors may add any hyperlink to right:									
Information Only	Ideal	Core	Mandatory	**Standard:** Individual system functions should be modular, thereby providing individual business functions in a componentized fashion. **Comment:** Separated program modules should allow the individual modules to be 'called' from one another or from a main program in order to 're-use' functionality across the system. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should describe degree of componentization and whether the system is more fully based on principles of SOA.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
	1			***WSDL or WADL Enabled***										
					Vendors may add any hyperlink to right:									
Information Only	Ideal	Core	Mandatory	**Standard:** System should allow business functions/processes to be defined in WSDL or WADL. **Comment:** Web Services Description Language (WSDL) is used to define a service within an SOA environment. Applications which are truly Web Services enabled will use this utility. Similarly, Web Application Description Language (WADL) is used to fine services usually within a REST web service. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should indicate if and where WSDL/WADL is used to define common services.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
	1			***WSFL Enabled***										
					Vendors may add any hyperlink to right:									
Information Only	Ideal	Core	Mandatory	**Standard:** When applicable, system should allow workflow attributes to be described in WSFL. **Comment:** Web Services Flow Language (WSFL) may be used to describe workflow activities within an SOA environment. Applications with workflow attributes may use this utility. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should indicate if and where WSFL is used to define common services.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
		1		***SOAP or REST Enabled***										
					Vendors may add any hyperlink to right:									
y				**Standard:** Important system functions shall be callable via SOAP or REST protocol.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but										

Information Onl	Ideal	Core	Mandatory	**Comment:** Application functions that can be evoked via SOAP or REST protocol can be leveraged by other applications as a service. In some cases, functions within legacy applications can be wrapped to become "callable" and may use this technique to into a future HE architecture more smoothly. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall indicate what functions, if any, are available to be called via SOAP or REST consistent procedures.	vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	
	1			***UDDI Enabled***		
					Vendors may add any hyperlink to right:	
Information Only	Ideal	Core	Mandatory	**Standard:** Important system functions can be described using UDDI publishing. **Comment:** Important application functions may, under certain conditions, be described and published using Universal Discovery, Description and Integration (UDDI) techniques. When used appropriately, these techniques can allow system functions to be more fully exposed and available to other system uses. Appropriate judgment should be used in requiring this standard. **Preference:** No products specifically preferred. **Desired Feedback:** System providers should indicate what functions, if any, are described and/or published using UDDI.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	
	1			***Service Choreography***		
					Vendors may add any hyperlink to right:	
Information Only	Ideal	Core	Mandatory	**Standard:** System should be componentized to the point of allowing process functions to be rearranged in order to form a new process flow with different characteristics (i.e., choreographed). **Comment:** Service Choreography refers to the ability to re-configure business processes using utilities that rearrange the manner and sequence in which SOA enabled program modules (containing business logic) are executed. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should indicate whether choreography management functions have been built into system and how extensive they may be.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	

Integration Architecture

Integration Capabilities

					Meets	Will	3rd P	Cust	No	Other
		1		***API Extensiveness/Flexibility***						
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:					
				Standard: All user accessible data in the system shall be capable of being accessed via documented APIs (with the preferred method of access being a data access model). **Comment:** Data transfer in and out of applications is a critical component for evaluation. At a minimum, HE expects applications to have a robust level of Application Program Interfaces (API) or more preferably a data object model that provides flexibility to access the full range of functional data. Testing Excel insertion with paste link to word. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe API extensiveness including whether edit controls are applied to APIs and whether a data model is used for outside access to system data. More extensive feedback would include lists of documented APIs or documentation for the data access model.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.					
		1		***Integration with Websphere MQ and Message Broker***						
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:					
				Standard: System should support integration with IBM's Websphere MQ and Message Broker. **Comment:** For applications that communicate with other applications via a messaging process, HE seeks to accommodate such communication within its selected enterprise messaging system which is Wesphere MQ. For application to application communication, especially if communication is in real time, HE seeks to perform Enterprise Architecture Integration (EAI) functions using IBM Message Broker. **Preference:** Websphere MQ and Message Broker **Desired Feedback:** System provider should indicate if the system support integration with WebSphere MQ and Message Broker.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.					
	1			***Native XML Support***						
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:					
				Standard: System should support use of XML natively to present data or to transfer information in and out of the system. **Comment:** XML is widely accepted by today's IT industry, and it is the fundamental standard for SOA. Both WSDL/WADL and SOAP/REST are all defined in XML format. Native application support for XML is considered ideal with XML compatibility via additional utilities established as a next best alternative. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should describe native provisions for presenting data and whether that includes converting data to an XML format for inter system communication.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.					
		1		***XML Compatibility***						
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:					
				Standard: Even if the system does not natively support XML, the system shall be architected to extensively support XML processing through 3rd party XML utilities. **Comment:** Irrespective of whether the system natively supports XML interchange, does the system interface tightly with third party XML utilities that can be used to either convert system data to XML or take system provided XML data and process it further? **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall explain systems compatibility with 3rd party XML utilities and name its preferred utility if one exists.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.					
	1			***Integration at the Web Services Layer***						
nly					Vendors may add any hyperlink to right:					
				Standard: System should support integration flexibility at the web services layer such as allowing XML/WSDL/WADL calls or the interactive use of portlets.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired.					

Information Or	Ideal	Core	Mandatory		**Comment:** HE seeks functional flexibility among its applications that allow applications to make calls for web services and to receive calls for web services. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should explain the degree to which the system utilizes web services for calling services and for defining services that can be called.	Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
	1			***Integration with OData***									
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** System should support integration with Microsoft's Open Data Protocol (OData). **Comment:** OData allows for integration of the application data with other applications. **Preference:** No products specifically preferred **Desired Feedback:** System provider should explain whether system can be configured to support OData.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Integration ETL Tools***									
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** For direct DB to DB data consolidation, integration or Extract/Transfer/Load (ETL) functions, the system shall support integration with MS SQL Server Integration Services (SSIS) or SAP Data Services. **Comment:** When the direct integration of data environments is performed between two MS SQL compliant data bases, HE supports the use of SSIS for performing and monitoring the full Extract/Transfer/Load (ETL) of data from one database to the other. For other system-to-system transfers, SAP Data Services is the desired tool. **Preference:** Integration with MS SSIS and SAP Data Services. **Desired Feedback:** For relevant functions, system provider shall describe data integration capabilities and the ability of the system to leverage SSIS or SAP Data Services.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
Interoperability with Key Services Important to HE							Meets	Will	3rd P	Cust	No	Other	
		1		***Interoperability with MS Exchange***									
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** For e-mail related functions, system interfaces with or interoperates with MS Exchange 2010 or higher. **Comment:** For systems or applications that shall interoperate with e-mail to facilitate workflow notifications or other human messaging services, HE expects that such systems will interface with its current implementation of MS Exchange. **Preference:** Integrate with MS Exchange 2010 & 2012. **Desired Feedback:** System provider shall indicate the functions and the degree of integration, if any, with MS Exchange.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Interoperability with MS Office SharePoint***									
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** For relevant services, system shall interface with MS Office SharePoint. **Comment:** For systems or applications that shall integrate with group collaboration or group office productivity software, HE expects that such systems will interface with its current implementation of SharePoint. **Preference:** Integrate with SharePoint 2013. **Desired Feedback:** System provider shall outline functions and levels of interoperation with HE currently supported version of SharePoint.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Interoperability with MS Office desktop productivity suite***									
						Vendors may add any hyperlink to right:							
ormation Only	Ideal	Core	Mandatory		**Standard:** For relevant office productivity integrations at the desktop, system shall interface with MS Office 2010 or higher. **Comment:** For systems or applications that should interoperate with desktop productivity tools, HE expects that such systems will interface with its current implementation of MS Office 2010 and will migrate with HE to a newer MS Office at an appropriate later date.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors							

Info				**Preference:** Integration with MS Office 2010 or Higher. **Desired Feedback:** System provider should outline functions and levels of interoperation with MS Office 2010 or Higher.	Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
	1			***Interoperability with SAP Business Objects***									
Information Only	Ideal	Core	Mandatory	**Standard:** For selected enterprise reporting services, the system should support use of SAP Business Objects. **Comment:** This is a stated direction for the future as HE focuses on Business Objects for enterprise reporting. **Preference:** SAP Business Objects preferred. **Desired Feedback:** For relevant functions, system provider should describe data reporting compatibility with Business Objects.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
EDI Support						Meets	Will	3rd P	Cust	No	Other		
	1			***Native EDI Support***									
Information Only	Ideal	Core	Mandatory	**Standard:** When Electronic Data Interchange (EDI) support is required, system/application should provide native EDI support consistent with industry standard EDI file formats when such formats are applicable. **Comment:** Because some HE business partners require EDI based file transfer communication, native support of EDI in relevant applications is preferred. EDI is relevant for a small minority of business functions, but for those limited functions, it may be quite important. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should describe EDI features and compliance with relevant industry protocols for standard file formats.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
	1			***EDI Support***									
Information Only	Ideal	Core	Mandatory	**Standard:** When Electronic Data Interchange (EDI) support is required and application does not natively support EDI communication, the system should easily allow for EDI support to be applied through integration with 3rd party tools. **Comment:** If the preferred standard of native EDI support is not included in the system/application, the system should be compatible with use of third party EDI tools by providing convenient file export functions that can be linked fairly seamlessly to third party EDI file management tools. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should describe the form of integration between system and third party tools including the name of recommended tools.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
User Interface (UI) Standards – Cross Platform						Meets	Will	3rd P	Cust	No	Other		
		1		***Windows based Web Browser Compatibility – Internal Use***									
Information Only	Ideal	Core	Mandatory	**Standard:** Browser based potions of system shall work with MS Explorer 10.0. **Comment:** Applications that deliver UI over browser technology shall be compatible with the currently stated HE standard for internal browser compatibility. **Preference:** Vendor can certify Microsoft Internet Explorer. **Desired Feedback:** System provider shall state clearly what their browser compatibilities include and/or what their requirements are.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
		1		***Extended Web Browser Compatibility – Internal Use***									
Information Only	Ideal	Core	Mandatory	**Standard:** Browser based potions of system shall work with MS Explorer 10.0 to be inclusive of all internal users. **Comment:** Applications that deliver UI over browser technology shall be compatible with the currently stated HE standard for internal browser compatibility. **Preference:** Vendor can certify Microsoft Internet Explorer.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references								

				Desired Feedback: System provider shall state clearly what their browser compatibilities include and/or what their requirements are.	may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
		1		***General Web Browser Compatibility – External Use***									
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:								
				Standard: Browser based potions of system exposed to public facing internet shall work with MS Explorer 10.0 & higher, Firefox 32.0 & higher and Safari 7.0 and higher to be inclusive of all external users. **Comment:** Applications that deliver UI over browser technology shall be compatible with the currently stated HE standard for external browser (public facing) technology and the separate standard for external browser technology. **Preference:** Certify Explorer, Firefox & Safari, Chrome. **Desired Feedback:** System provider shall state clearly what their browser compatibilities include and/or what their requirements are.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
	1			***Full Enablement of UI via Browser (without Terminal Services)***									
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:								
				Standard: When required, web browser can be used as the sole client side access for the application. Native browser support is generally preferred while self-updating plug-ins may be accepted. **Comment:** The software should have web browser enabled UI (HTML over HTTP) that conducts the user interaction from either an unaided browser, or at minimum, a browser with plug-ins that update automatically. The objective of this standard is to support the application via "thin client" technologies which should not require HE to install any interface application on the user's desktop PC or require use of Terminal Services. **Preference:** Compatibility on all HE Browsers. **Desired Feedback:** System provider should indicate level of compliance with all browsers listed in current HE General Web Browser Compatibility standard.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
	1			***Web Portal Enablement for External Use***									
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:								
				Standard: Information and functionality in the system UI can be segmented and presented as components within a web portal. **Comment:** The ability to have meaningful chunks of software application functionality and information displayed within a Web Portal is consistent with HE direction and is desired in any application in as much as it is reasonable and meaningful. Allowing flexible data exchange among portal segments is also desired. **Preference:** Integration with Ingeniux. **Desired Feedback:** System provider should outline the system capabilities for expressing its parts as portal components.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
User Interface (UI) Standards - Windows						Meets	Will	3rd P	Cust	No	Other		
		1		***Use of Windows 7 Browsers for Presentation***									
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:								
				Standard: For internally-accessed components, if system will not install as a native client on Windows 7 devices, system can use MS Explorer browser for full presentation and interaction. **Comment:** At a minimum, systems that must be accessed via Windows PCs must be able to present information and appropriate functionality via the native browser (MS Explorer) features of Windows 7. **Preference:** MS Explorer 10. **Desired Feedback:** System provider should indicate how system can be assessed and utilized via Windows 7 workstations.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								

Technology Architecture

Server Platforms

					Meets	Will	3rd P	Cust	No	Other
		1		***Application Server Platform***						
				Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System should operate on current HE Application Server Platform Standard which is defined as Windows Server or AIX. **Comment:** HE mandates that any new software packages run on the current HE standard. **Preference:** Preference for Windows Server 2012 and AIX. Lesser preference for Redhat. **Desired Feedback:** System provider should specify supported application server platforms.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Use of MS IIS as Web Server Platform***						
				Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** Web related system services should operate using a currently supported version of Microsoft Internet Information Server (IIS). **Comment:** Software requiring a web server platform should operate from the most recent version of MS IIS. Limited use of Unix Webservers may be allowed on a case-by-case basis. **Preference:** Preference for most recent version of MS IIS. **Desired Feedback:** System provider should specify supported web server platforms.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						

Scalability and Performance

					Meets	Will	3rd P	Cust	No	Other
1				***Vertical Scalability***						
				Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System can be scaled vertically by adding CPU power and/or memory. **Comment:** This is both application architecture standard and hardware standard. A system shall be able to scale by adding memory and/or CPU power. Horizontal scalability is addressed by a separate standard. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe ability to scale by adding resources to a single server and shall further describe any impact on licensing and fees.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Horizontal Scalability***						
				Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System can be scaled horizontally by adding servers. **Comment:** Horizontal Scaling means applications can be run on a cluster of servers (with balancing), thus enabling HE to add more servers when the work load expands. Not all software allows horizontal scaling. **Preference:** F5 load balancing preferred. **Desired Feedback:** System provider should describe ability to scale by adding additional servers.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Cluster Awareness***						
				Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System is 'cluster aware' at the application layer and can fully leverage server based clustering techniques. **Comment:** To fully leverage clustering features, the application layer must be designed to work with server functionality to engage clustering options. System provides such integration. **Preference:** Preference is Power HA for AIX, MS clustering for Windows, and Service Guard for Linux. **Desired Feedback:** System provider should provide information and architectural specifications dealing with how the system leverages clustering capabilities.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Manual Failover Procedures***						
				Vendors may add any hyperlink to right:						

Information Only	Ideal	Core	Mandatory		**Standard:** System can be recreated and brought back to prior state through manual restoration processes while also using system logs or other outside messaging / broker services to understand which transactions may have failed. **Comment:** This standard for failover protection is not intended to cover instant or semi-automatic failover services but instead represents a base line standard to validate that the system can at least be restored to a specific 'before failure' state using manual system restore techniques. **Preference:** No products specifically preferred. **Desired Feedback:** If system is not being protected via other semi automated or fully automated fail over techniques, system provider should describe the steps necessary to restore the system and potentially recover transactions in progress at the point of failure.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Semi Automated Failover Protection***									
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** System supports semi automated failover protection that allows a replacement platform to be brought up within 15 minutes of failure complete with an audit log of failed transactions. **Comment:** This standard for failover protection is not intended to cover instant failover involving full transaction recovery and seamless, automated re-processing of transactions. This standard assumes some operator intervention to bring up replacement system and to find, account for and re-process failed transactions. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify the steps necessary to provide for system restoration (even if manual) including the steps necessary to identify (and restore) transactions in progress at the time of failure.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Unattended High Availability Failover Protection***									
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** System supports High Availability failover protection that provides for unattended within 1 second with complete transaction recovery and seamless re-processing of failed transactions in progress. **Comment:** This standard for failover protection assumes near instant failover involving full transaction recovery and seamless, automated re-processing of transactions. This standard assumes no significant operator intervention to bring up replacement system and to find, account for and re-process failed transactions. **Preference:** Preference is Power HA for AIX, MS clustering for Windows, and Service Guard for Linux. **Desired Feedback:** System provider shall detail high availability failover protection options.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	1			***Response Time Performance – Internal Network***									
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** Overall Response time for a simple transaction should be consistent with the needs of the application. Internal Client based systems should generally return a query within 1.0 seconds on networks if one assumes a baseline of 50 mbps effective throughput. **Comment:** Response is difficult to estimate, but in general, response time performance for internally deployed systems operating at an average of 50 mbps should generally fall within 1.0 seconds for simple transactions. HE understands that ultimate responsiveness is heavily influenced by our underlying network and data stores, and HE expects that its systems can support such responsiveness if the application is well constructed. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should estimate system architecture requirements to achieve HE response standards. Provider should also indicate estimated response time.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	1			***Response Time Performance – External Facing***									
						Vendors may add any hyperlink to right:							

Information Only	Ideal	Core	Mandatory		**Standard:** Overall Response time for a simple query should be consistent with the needs of the application. Response to a well powered web client assuming a base overall through put speed of 8 mbps on the network should be within 1.5 seconds. HE understands that ultimate responsiveness is also heavily influenced by our underlying network and data stores, and HE expects that its systems can support such responsiveness if the application is well constructed. **Comment:** Response is difficult to estimate, but in general, response time performance for web systems that provide external interactions to HE constituents and community members should provide return pages within 1.5 seconds assuming a typical workstation and an 8 mbps download speed to a major ISP. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should estimate system architecture requirements to achieve HE response as stated.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
				Network/Communication Architecture							Meets	Will	3rd P	Cust	No	Other
		1		***TCP/IP Network Transport Protocol***												
										Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory		**Standard:** TCP/IP is the standard HE business network transport protocol. **Comment:** HE does not support Novell NCP, IPX or other proprietary protocols other than VPN encryptions that continue to use TCP/IP. NetBIOS is not supported as a transport protocol even if it is recognized. **Preference:** IPv4 required. **Desired Feedback:** System provider shall describe its network transport protocols.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										
		1		***HTTP and HTTPS Data Transport Protocols***												
										Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory		**Standard:** HTTP and HTTPS are the standard HE web data transport protocols. **Comment:** HTTP is the dominant data transport protocol today and it is a HE mandate for on-line applications. HTTPS is, at a minimum, required for secure data transport but can be replaced by more secure forms of connectivity as needed. See the "Cryptographic System" requirement for additional information. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe its data transport protocols.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.										

System Operation, Management and Support Architecture													
System Operation and Management							Meets	Will	3rd P	Cust	No	Other
		1		***Capability to Run in Virtual Environment***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System is capable of effective operation in a virtual server environment. **Comment:** System will operate in a virtual server environment such as VMware or IBM LPARS. System functionality in the virtual server environment shall be equal to functionality on a dedicated server. **Preference:** VMware or AIX LPAR preferred. **Desired Feedback:** System provider shall indicate in what virtual environments, if any, the system will operate.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Compatibility with Storage Area Network (SAN)***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System implementer shall deploy storage services within HE Storage Area Network (SAN) based on 3PAR. **Comment:** System shall be deployed to operate using a SAN for all system data storage needs other than server based logs or configuration files. **Preference:** 3PAR preferred. **Desired Feedback:** System implementer shall be familiar with SAN technologies in order to ensure that the product being implemented is configured correctly to function in a SAN environment.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	1			***Compatibility with Native Fiber Channel for SAN Management***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System is compatible with the native fiber channel used with Storage Area Network (SAN) management. **Comment:** System will operate using native fiber channel standards for transmitting hardware commands used to manage remote services on SAN servers and devices. **Preference:** EMC SAN services using native fiber channel **Desired Feedback:** System provider shall indicate compatibility with native fiber channel.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant						
		1		***Compatibility with On-Line Back-up and Restore Functions***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System is capable of effective operation in concert with On-Line data back up procedures including awareness of open transactions and files. **Comment:** System shall allow data and applications to be backed up using on-line back up and restore services. Back-ups shall work from a schedule and the restore functions shall not first require conventional loading of the OS and relevant applications. HE currently uses CommVault software systems to manage its storage management and back-up services. **Preference:** Preference is eVault i365. **Desired Feedback:** System provider shall indicate compatibility with eVault i365 and related procedures.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Compatibility with System Configuration Management software***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System is capable of effective operation in conjunction with system configuration software. **Comment:** System software change and configuration management services can be managed using SCCM (for windows) and Uptime (for AIX and Linux). **Preference:** SCCM management services for Windows, Uptime for AIX & Redhat. **Desired Feedback:** System provider shall indicate compatibility configuration software.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Patch Level Compatibility***								
						Vendors may add any hyperlink to right:						
				Standard: Applications must be consistent with current HE upgrade and fixpack levels for the HE Operating Environment.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but						

Information Only	Ideal	Core	Mandatory	**Comment:** Most software packages are designed and implemented based on certain patch and upgrade levels within the IT environment. (e.g., .Net, J2EE or JVM level, Operating system version and fix pack level, etc.) Quite often, when people purchase different packages (even from the same system provider), there is a version/specification level conflict. It is important to resolve compatibility issues before packages are purchased or deployed. **Preference:** Product must maintain compatibility with current platform versions. **Desired Feedback:** System provider shall state policy to maintain software compatibility with underlying system patches.	vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***System Management Utilities***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** Systems and applications shall be supported by system management utilities commensurate with the management needs of the product. **Comment:** Systems management requirements must be established to meet the specific needs of the application and its environment. Major categories of requirements will include: (1) system utilities, (2) backup/recovery and (3) routine system management/operational procedures. **Preference:** Preferences are MS System Center Operations Manager and AIX (native tool). **Desired Feedback:** System provider shall state compatibility with stated system management utilities.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
1				***Compatibility with Application Performance Management (APM)***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System supports and is tolerant of Application Performance Management (APM) monitoring. **Comment:** System should not show ill effects, slow or otherwise be intolerant of APM modules running on the network to provide information on the performance of systems operating from network servers. **Preference:** SCOM management services. **Desired Feedback:** System provider should indicate compatibility with SCOM capabilities.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Low Intervention Maintenance Requirements***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System shall have no to low system intervention needs requiring operator initiated or assisted maintenance activities such as purging of log files, data integrity checks, indexing or similar activities. **Comment:** System management requirements shall be capable of being automated where reasonable and the number of manual or operator initiated interventions shall be small to non-existent. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall outline all maintenance functions requiring regular intervention by system operators.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
1				***Service Lifecycle and Upgrade Schedules***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** Software product service lifecycle and upgrade schedules should be consistent with HE expectations for system life (upgrades on the average of four years, with expected product life on the order of ten to twelve years). **Comment:** This standard is highly discretionary and is included for fundamental data gathering and overall assessment as opposed to strict quantitative evaluation. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should describe and service lifecycle and upgrade schedules.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	System Support					Meets	Will	3rd P	Cust	No	Other
1				***Remote Support Capability and Access***							
					Vendors may add any hyperlink to right:						
				Standard: Remote support access for systems or applications is to be granted on a very judicious basis and shall conform to ITS Remote Access policies.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but						

| | | |

Security and Privacy Architecture

User Access Management

					Meets	Will	3rd P	Cust	No	Other
		1		***Authentication and Identification***						
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:					
				Standard: System shall provide or allow for user authentication and identification. **Comment:** System integrated into the HE environment must provide user ID management and logon functions as well as provide or interface with measures designed to guard against fraudulent transmission and imitative communication deception by establishing the validity of the transmission, message, station or individual. System shall provide authentication and identification for employees and customers. **Preference:** MS Active Directory preferred. **Desired Feedback:** System provider shall describe authentication and ID capabilities.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.					
		1		***Use of Integrated Windows Authentication for Web Services***						
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:					
				Standard: If system uses web based components, system shall interface with Integrated Windows Authentication (IWA) to provide for user authentication and identification. **Comment:** Any new software package must provide user ID management and logon functions and HE desires that its systems use in as much as appropriate, the features of MS Integrated Windows Authentication. **Preference:** MS Active Directory preferred. **Desired Feedback:** System provider shall describe the extent of IWA capabilities.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.					
		1		***LDAP Integration***						
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:					
				Standard: The system operates in conjunction with standard LDAP services. **Comment:** LDAP is the most widely accepted protocol for maintaining a directory of authenticated users and while a software package may provide its own authentication service, the capability of using 3rd party authentication using LDAP information is critical for raising security services to an enterprise level and using services such as single sign-on (SSO). **Preference:** MS Active Directory preferred. LDAP where Active Directory not supported. **Desired Feedback:** System provider shall describe the extent of LDAP integration.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.					
		1		***Internal and External Password Management***						
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:					
				Standard: System must be capable of enforcing strong password handling for all external customer users and for HE users (employees or contractors), and the ability to enforce different rules based on account type (e.g. internal, customer, supervisor, administrator) **Comment:** Vendor system must support the following: - Must have capability to have passwords expire on a configurable timeline based on account/user role, with 90-days being the default for internal system users and no expiration date for customers. - Must have configurable complexity requirements based on account/user role, including the ability to require: - passwords for internal system accounts must contain three or more of the following groups: --- Upper case letters; --- Lower case letters; --- Numbers; --- Special characters (ex: $, @, #, %, etc.); - At least eight (8) characters long; - Must not be common words or combinations of common words; - Must not be the same as the user ID, nor an anagram or variation of the user ID. - Cannot reuse the last (configurable number) passwords by user type, with 10 being the default for internal system users and no re-use restriction for customers. **Preference:** No products specifically preferred.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.					

				Desired Feedback: System provider must verify that password strength and reset requirements can be configured and enforced.							
			1	***Customer Privacy Settings- Web***							
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:						
				Standard: System must not store cookies containing personally identifiable information and use the standard privacy settings of the browser. **Comment:** The system must also not employ SuperCookies, EverCookies, PermaCookies or any other mechanism that circumvents a user's browser privacy settings. **Preference:** No products specifically preferred. **Desired Feedback:** System provider must verify that cookies containing customer privacy information are not stored. System provider must verify that browser privacy settings are not overridden.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1	***Customer Privacy Settings-Mobile***							
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:						
				Standard: System must not override a customer's mobile privacy settings. **Comment:** If the solution contains a mobile application (smart phone, tablet, etc.) The mobile application must obey the customer's mobile privacy settings for sharing or collection of customer data, such as contacts, geo-location data, or any other information not explicitly entered by the customer into the application. **Preference:** No products specifically preferred. **Desired Feedback:** System provider must verify that mobile application privacy settings are not overridden.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Confirmation of Customer Privacy Settings-Mobile***							
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:						
				Standard: System shall prompt for permission to access customer data. **Comment:** If the solution contains a mobile application (smart phone, tablet, etc.) The mobile application must prompt before accessing customer data, such as contacts, geo-location data, or any other information not explicitly entered by the customer into the application. **Preference:** No products specifically preferred. **Desired Feedback:** System provider must verify that mobile application requires customer action to approve.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Single Sign-On (SSO) Enabled***							
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:						
				Standard: Product supports Single Sign-On (SSO). **Comment:** SSO can make security management easier, and provides an improved user experience. In the real world, when users have too many IDs and passwords to remember, the system may be less secure. **Preference:** MS Active Directory preferred for internal and SAML for external. **Desired Feedback:** System provider shall verify that system is compatible with SSO.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Removal of Generic Accounts***							
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:						
				Standard: At the time of install all generic accounts and default logins shall be removed. **Comment:** Default accounts and passwords may make the system vulnerable to unauthorized access. Unnecessary accounts shall be removed. For accounts that are required for proper system operation, the system provider shall document all accounts that are required and enable HE to modify them from the default setting. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall confirm that generic accounts and default logins will be removed/modified during installation.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Multi-level Access Control***							
					Vendors may add any hyperlink to right:						

Information Only / Ideal / Core / Mandatory			**Standard:** Product provides multiple levels of access control based on user profiles. **Comment:** Product security shall allow access control to be imposed at multiple levels and shall generally extend to the data field level. For example multi-level denotes the ability to control at the field, page, function and/or module. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify extent of multi-level access control capabilities.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
	1		***Task or Role Based Access Control***									
				Vendors may add any hyperlink to right:								
Information Only / Ideal / Core / Mandatory			**Standard:** Product provides task or role based access control tied to user profiles and group definitions. **Comment:** Product security shall allow access control to be defined according to tasks or roles that are in turn related to 'groups' defined as part of the user profile administration. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall explain task and role based security controls for function access and data access as well as the manner in which groups are defined to represent these roles.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
	1		***Task or Role Based Data Import/Export Control***									
				Vendors may add any hyperlink to right:								
Information Only / Ideal / Core / Mandatory			**Standard:** Product provides task or role based data import/export control tied to user profiles and group definitions. **Comment:** Product security shall allow data import and export control to be defined according to tasks or roles that are in turn related to 'groups' defined as part of the user profile administration. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall explain task and role based security controls for data import/export and the manner in which groups are defined to represent these roles.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
Software and Services					Meets	Will	3rd P	Cust	No	Other		
	1		***Removal of Unnecessary Software***									
				Vendors may add any hyperlink to right:								
Information Only / Ideal / Core / Mandatory			**Standard:** All software components that are not required for the operation and/or maintenance of the procured product shall be removed. If removal is not technically feasible, then software features that are not required for the operation and/or maintenance of the procured product shall be disabled. **Comment:** Unnecessary software and features (e.g., messaging services, unused drivers, etc.) that are left enabled may make it easier for unauthorized access to occur and remain undetected. All items retained shall be documented. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall confirm that it will remove/disable all unnecessary software/features and - for features that cannot be disabled - that it will provide risk mitigation support.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
	1		***Disable non-required services and ports***									
				Vendors may add any hyperlink to right:								
Information Only / Ideal / Core / Mandatory			**Standard:** Services and ports not required for operation of the system may provide vulnerability and shall be removed and disabled. **Comment:** System shall be able to function without the disabled ports and services. All such actions shall be documented by the system provider. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall indicate what ports and services are not required.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
	1		***Version/Patch utility***									
				Vendors may add any hyperlink to right:								
			Standard: All versions for software, configurations, firmware, scripts, macros and enabled ports and services shall be accessible and reported through a utility.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired.								

Information Only	Ideal	Core	Mandatory		**Comment:** Application utility needs to aggregate and report on existing versions/patches by module or executable file. The Supplier shall provide documentation of software/firmware that supports the procured product, including scripts and/or macros, run time configuration files and interpreters, databases and tables, and all other included software (identifying versions, revisions, and/or patch levels, as delivered). The listing shall include all ports and authorized services required for normal operation, emergency operation, or troubleshooting. This documentation must include user guide(s); system installation and maintenance documentation; application flow diagrams and descriptions; data file schema; back-up procedures; and recommended security and user test procedures. **Preference:** Native to the product (no third party). **Desired Feedback:** System provider shall confirm that it can provide a full inventory of software, firmware, scripts, ports, etc. supporting procured product and that unnecessary items will be removed or disabled during implementation.	Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
				Connection and Data Transport Security			Meets	Will	3rd P	Cust	No	Other
			1	***Web browser session protection***								
Information Only	Ideal	Core	Mandatory		**Standard:** For web based components, the system supports the Transport Layer Security (TLS) protocol for internet session security. **Comment:** 1) For web browser based components, the system must support the Transport Layer Security (TLS) protocol for internet browser session security, but the vendor is free to recommend alternative encryption methods as well. 2) Unless otherwise agreed to during system implementation, set a default of using TLS for all web browser pages handling non-public data. 3) Use HTTP Strict Transport Security (HSTS) and the Secure Cookie flag for all browser sessions handling non-public data. 4) Do not include Hawaiian Electric Company non-public data as part of any URL. **Preference:** TLS v1.2. **Desired Feedback:** System provider shall verify that system uses TLS where appropriate.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1	***SSH File Transfer Protocol***								
Information Only	Ideal	Core	Mandatory		**Standard:** System shall support large file transfer utilizing a SSH (Secure Shell) File Transfer Protocol (SFTP) Server. **Comment:** SFTP is the current industry standard for secure file transfer and is a HE mandate for open transfer of HE information. **Preference:** See "Cryptographic System" requirement for algorithm. **Desired Feedback:** System provider shall verify system uses SFTP where appropriate.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1	***Inter-process Communication***								
Information Only	Ideal	Core	Mandatory		**Standard:** The system shall enforce security policies from the critical side when interprocess communication is initiated from a less privileged application. **Comment:** Separation of privileges between different applications is critical for minimizing the extent of system vulnerability if a particular application is compromised. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify its ability to configure interprocess communication and privilege separation.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1	***Secure Transport of Company non-Public Data***								
formation Only	Ideal	Core	Mandatory		**Standard:** System shall support secure transmission of all non-public data. **Comment:** All non-public data must be encrypted in accordance with the standard depicted in the "Cryptographic System" requirement . **Preference:** See "Cryptographic System" requirement for algorithm.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment						

In				**Desired Feedback:** System provider shall specify the algorithms used for secure transports.	may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant								
		1		***Network Security Zones***									
Information Only	Ideal	Core	Mandatory	**Standard:** Vendor must document all data flows required to traverse any electronic security perimeter (ESP), whether between multiple internal ESPs or between internal and external ESPs. Requirements for Medium Impact BES Cyber Systems found in NERC CIP-005-5 Electronic Security Perimeters shall be followed. **Comment:** The network shall be segmented into multiple network security zones, and methods shall be in place to restrict communication between zones. Also see the "System Interfaces" requirement. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe its proposed network architecture and methods for controlling communication between network security zones. Vendor must provide this information regardless of whether the security zone interface devices are provided or maintained by the vendor.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
			1	***Wireless Technology***									
Information Only	Ideal	Core	Mandatory	**Standard:** Where wireless links are used in the implemented system, the system shall support wireless technologies while remaining compliant with security standards. System shall support link or end-to-end encryption independent of data transmission carrier. **Comment:** The system shall be compatible with other wireless equipment and shall minimize the potential for signal interception. The system shall be resilient to high-level threats including denial of service, eavesdropping, man-in-the-middle, masquerading, message modification, message replay, and traffic analysis. The system provider shall provide documentation regarding capabilities, requirements, limitations, and security of the system's wireless communication devices. **Preference:** See "Cryptographic System" requirement for algorithm. WPA-2 Enterprise for 802.11 for authentication. **Desired Feedback:** System provider shall describe the wireless protocols that are compatible with the provider's devices and demonstrate that known attacks do not compromise receiving devices. Describe their link or end-to-end encryption method and how it is independent of a data provider encryption (e.g. cellular data or microwave).	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
			1	***Network Intrusion Detection***									
Information Only	Ideal	Core	Mandatory	**Standard:** The system shall allow for means to document that network traffic is monitored, filtered, and alarmed (e.g., alarms for unexpected traffic through network security zones) and provide filtering and monitoring rules on a 24x7x365 basis. **Comment:** The system shall be configured with an intrusion detection system (IDS), which may be either host-based or network-based. The system provider shall provide recommendations for optimal IDS configuration which will enable HE to monitor traffic. **Preference:** Supports integration with HE network IDS. **Desired Feedback:** System provider shall describe its proposed network intrusion detection system architecture and monitoring conditions.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
Data Storage Security						Meets	Will	3rd P	Cust	No	Other		
		1		***Elimination of 'Cached' Data***									
Information Only	Ideal	Core	Mandatory	**Standard:** If caching is used with non-public HE data, the cached data shall be encrypted and eliminated when no longer needed. **Comment:** If confidential data is processed on the system, the system shall provide for the encryption of the cached data and elimination the cached data to assure that residual data is not left in caches or on local hard drives. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall fully explain to what extent confidential information can be targeted and encrypted.	Vendors may add any hyperlink to right: At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
			1	***Secure Storage of Company "Confidential-Restricted" Data At Rest.***									
					Vendors may add any hyperlink to right:								

Information Only	Ideal	Core	Mandatory		**Standard:** Regulated data, such as SSNs, financial account numbers, driver's license, and PHI shall be encrypted at rest. PINS and passwords shall be stored hashed and never in clear text. **Comment:** If confidential restricted data is stored via the system, the data shall be protected against unauthorized access or other exposure via encryption. The encryption (cipher) can be provided via a 3rd Party tool, but shall seamlessly integrate with the system. **Preference:** See "Cryptographic System" requirement for specifics on algorithms. HE currently uses Vormetric software to encrypt data at rest. **Desired Feedback:** System provider shall confirm compliance.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
Behavior Based Security Controls							Meets	Will	3rd P	Cust	No	Other
		1		***Session Termination for Inactivity***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory		**Standard:** The system shall provide for automated session terminations after configurable periods of inactivity. **Comment:** System shall monitor the activity level of a session and after a designated number of minutes of inactivity, system shall automatically close out the session and require re-logging of at least the password to continue. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe how this functionality is implemented and what level of granularity exists for HE to configure settings.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Limit Concurrent Sessions for Same User***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory		**Standard:** The system shall be able to set configurable limits on the number of concurrent sessions allowed for any user. **Comment:** System shall provide a configurable parameter to set the number of concurrent sessions allowed for any user. If the number is '1', then system would prevent a second log-on by the same user at the same time. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe how this functionality is implemented and what level of granularity exists for HE to configure settings.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Lock Out after Unsuccessful Log-On Attempts***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory		**Standard:** The system shall be able to lock out users after a configurable number of unsuccessful log-on attempts. **Comment:** System shall provide a configurable parameter to set the number of unsuccessful log-in attempts before user is locked out and requires a reset to log-in again. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall confirm its ability to provide and customize a lock-out system for failed log-in attempts.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
Audit, Alert and Reporting Safeguards							Meets	Will	3rd P	Cust	No	Other
		1		***Real-Time Inventory of Users***								
						Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory		**Standard:** The system shall be able to report real time on all active users outlining all of their permissions and roles. **Comment:** The system shall understand who is accessing the system at all times and be able to provide an immediate and on-going report of those users complete with all permissions granted, permissions being used, task roles granted and task roles being used. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify and explain provisions for tracking and understanding the actions of active users.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1	***Audit History of Access and Changes***								
						Vendors may add any hyperlink to right:						
nly					**Standard:** The system shall support tracking of new access, modification of access and security permissions for a configurable period.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but						

Information Or	Ideal	Core	Mandatory		**Comment:** The system shall enable HE to define specific permissions for individual users, modify permissions over configurable period, and track access by new users. **Preference:** No products specifically preferred. **Desired Feedback:** The system provider shall describe options for defining permissions and verify the ability to modify these permissions.	vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
			1	***Customizable Audit Logging and Reports***													
						Vendors may add any hyperlink to right:											
Information Only	Ideal	Core	Mandatory		**Standard:** The system shall provide customizable audit logs and produce customizable reports detailing user and administrator activities and security events. Event logging must be enabled. **Comment:** Administrative and user activities can be flagged for logging (and subsequent reporting) based on preferences set by HE. Bidder shall provide information on audit logging sufficient for regulatory requirements such as Sarbanes Oxley (SOX), as well as NERC CIP compliance, normal malware/attack indicators, and for analysis toward detection of Advanced Persistent Threats (APT). While NERC CIP compliance is not a regulatory requirement, its provisions are good practice and are used as guidance at HE. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe audit capabilities and associated report capabilities. In particular, provide information on their recommended logging for user/administrator activity, detection of standard malware/attack activity as well as APT.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
	1			***User Alert Regarding Prior Log-On***													
						Vendors may add any hyperlink to right:											
Information Only	Ideal	Core	Mandatory		**Standard:** The system shall be able to alert user as to the time and location of previous Log-on(s). **Comment:** Upon any log-in to the system, a notification shall appear showing the user the last date, time and source IP of the prior log-in(s). **Preference:** No products specifically preferred. **Desired Feedback:** System provider should describe what information the system provides to users regarding prior log-in(s).	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
System Integrity Assurance							Meets	Will	3rd P	Cust	No	Other					
	1			***Resistance to Denial of Service***													
						Vendors may add any hyperlink to right:											
Information Only	Ideal	Core	Mandatory		**Standard:** The system and or its infrastructure should be designed to resist 'Denial of Service' attacks. **Comment:** System should employ methods that minimize the impact and risks from 'Denial-of-Service' attacks (e.g., load balancing, packet filtering, connection throttling, etc.). **Preference:** Application should be configured to limit session. **Desired Feedback:** System provider should describe architecture components that help mitigate the risks from 'Denial of Service' attempts.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
			1	***Protection via Security Devices***													
						Vendors may add any hyperlink to right:											
Information Only	Ideal	Core	Mandatory		**Standard:** The system and or its infrastructure shall be adequately protected via external and internal security devices on a 24x7x365 basis. **Comment:** System shall be compatible with and interoperate with host- (HIDS) and network-based (NIDS) security protection devices. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe any recommended host and network security devices that provide these functions without impacting performance or functionality of the proposed system.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
			1	***Malware and Virus Protection***													
						Vendors may add any hyperlink to right:											
					Standard: The system shall monitor health of the environment such as memory, CPU usage, network activity, hard disk space and other critical items and alert the support staff.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired.								

Information Only	Ideal	Core	Mandatory	**Comment:** For systems hosted/maintained by Hawaiian Electric, integrating with Hawaiian Electric Anti-Virus tools is important for a system maintenance staff and cost/licensing perspective. For systems hosted/maintained by third parties, clarify requirements regarding keeping AV/malware signatures updated and notifying Hawaiian Electric whenever malware is detected on systems containing Hawaiian Electric data. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe its capabilities for preventing system infection by malware. Provider shall verify that cybersecurity services are compatible malware detection services. If malware detection is not included, service provider shall indicate compatible products.	Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***System Heartbeat Monitoring***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** Signals from system hardware, software, and firmware shall be monitored to detect abnormalities. **Comment:** The system shall preferably include regular heartbeat signals, but a last gasp from a failing component may also be used. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall identify viable heartbeat signals for network monitoring and examples of their application.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	Privacy Compliance					Meets	Will	3rd P	Cust	No	Other
		1		***Customer Data Purging***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** The system must allow for the purging or archiving of individual customers' data after a period of time as defined by HE. **Comment:** In particular, the system shall allow for configuration and rule definition of either the period of time after which purging or archiving is desired or the definition of individual customers or groups of customers for purging or archiving. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify that the system has the capabilities to allow for this flexibility.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Customer Communications Preference***							
					Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** System shall allow customers to define their preferred means of communications with HE. **Comment:** Customers shall be able to configure methods of communication including telephone, email, or text. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify that multiple communications channels are enabled throughout he system and that customers can be afforded the option as to which communication channel is preferred.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1	***Customer Opt-out***							
					Vendors may add any hyperlink to right:						
Information Only			Mandatory	**Standard:** The system shall manage and track customer Opt-outs. (Applies only to systems with which customers directly interact.) **Comment:** In particular, customer Opt-Out shall store an effective date to provide an audit trail and clarity of the customer's choice at any given period of time. **Preference:** No products specifically preferred. **Desired Feedback:** The system provider shall verify that customer opt-out, at a minimum, stores an effective date of opt-out. The system provider shall describe how the opt-out works.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1	***Customer Data Control***							
					Vendors may add any hyperlink to right:						
nly				**Standard:** The system shall allow for customers to exercise meaningful control over their data. (Applies only to systems with which customers directly interact.)	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired.						

Information Or	Ideal	Core	Mandatory		**Comment:** Specifically, customers shall be permitted to opt-out of providing secondary data use; and, customers shall be permitted to retrieve and update their data as desired. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe how the system provides for ad hoc data retrieval and updating as well as use of secondary data opt-out.	Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
	1			***Customer Authentication***									
					Vendors may add any hyperlink to right:								
Information Only	Ideal	Core	Mandatory	**Standard:** The system should allow flexibility and choice with respect to customer authentication. **Comment:** Customers should be able to use 2 factor authentication for their accounts if they desire. **Preference:** SAML support. **Desired Feedback:** System provider should describe how the system affords multiple authentication optionality for customers.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
Security Compliance						Meets	Will	3rd P	Cust	No	Other		
			1	***System Backup***									
					Vendors may add any hyperlink to right:								
Information Only	Ideal	Core	Mandatory	**Standard:** The system shall implement a rigorous data backup practice. **Comment:** For systems to be hosted at or managed by Hawaiian Electric, vendor system must be compliant with and integrated into the existing Hawaiian Electronic data backup systems and procedures. For systems hosted at external sites managed by the vendor or vendor's agent, vendor must ensure proper ongoing backup and storage of electronic data records. **Preference:** No products specifically preferred. **Desired Feedback:** System providers shall Describe how they have a defined a standard and enforced practice for system backup.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
	1			***Encryption Key Exchange***									
					Vendors may add any hyperlink to right:								
Information Only	Ideal	Core	Mandatory	**Standard:** The system should employ Ephemeral Key Exchange. **Comment:** Describe how your system can be used with ephemeral key exchanges for all key exchanges protecting transmission of highly sensitive data (Hawaiian Electric Confidential, Confidential-Restricted data, and control data) which traverses both an electronic and a physical security perimeter. Describe any performance or support implications of the use of Ephemeral Key Exchanges for your implementation. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should describe its cryptographic methods, how these support ephemeral key exchange.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								
			1	***Cryptographic System***									
					Vendors may add any hyperlink to right:								
Information Only	Ideal	Core	Mandatory	**Standard:** The system shall employ cryptographic system with Validated and Acceptable encryption and key management features. **Comment:** 1. Encryption must be "Validated" per FIPS 140-2 and currently "Acceptable" per NIST SP800-131(series). 2. Product must provide a method to remotely update encryption certificates on an acquirer-defined and configurable frequency without disrupting normal system operation. 3. Product must provide a method of updating the encryption method (algorithm/primitive) to maintain a NIST SP800-131(series) "Acceptable" encryption method throughout the service life of the device, without replacing the entire device. Vendor support must include provision for delivering these updates when needed. **Preference:** No products specifically preferred.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.								

				Desired Feedback: Vendor shall describe its cryptographic methods, how these support the availability, integrity, confidentiality, authentication and non-repudiation of information processed by their system, and describe the process for key management throughout the system life cycle. Vendor shall provide information on commercial Cryptographic Key Management Systems (CKMS) their product is already integrated with, and provide information about their recommended CKMS.								
		1		***Interactive Remote Access***								
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:							
				Standard: The system must adhere to remote access standards found in NERC "Guidance for Secure Interactive Remote Access" and NERC CIP-005-5 R2 as if these systems were Medium Impact BES Cyber Systems. **Comment:** System shall comply with HE remote access policies and NERC recommendations. While NERC CIP compliance is not a regulatory requirement, its provisions are good practice and are used as guidance at HE. **Preference:** No products specifically preferred. **Desired Feedback:** System provider must describe how remote access standards are defined and followed.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
			1	***OWASP Top Ten***								
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:							
				Standard: Vendor must document its design and testing regimen with respect to how each of the issues on the current version of the Open Web Application Security Project (OWASP) Top Ten vulnerabilities are addressed. **Comment:** OWASP Top Ten is a known and respected level of testing to ensure applications and application implementations are free from well known vulnerabilities. In addition, OWASP provides many configuration guides and 'cheat sheets' for various implementations. Vendor shall describe its utilization of these tools. **Preference:** No products specifically preferred. **Desired Feedback:** System provider must verify that OWASP Top Ten vulnerabilities are tested for and designed out of their systems and system implementations.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
			1	***Cyber Asset Reuse and Disposal***								
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:							
				Standard: Vendor shall ensure that any cyber asset containing HE information which is re-used or disposed of during or at the end of the project shall ensure compliance with NERC CIP-011-5 R2. **Comment:** Cyber assets containing HE non-public information shall be protected and information deleted by strong methods before being disposed of or re-used. While NERC CIP compliance is not a regulatory requirement, its provisions are good practice and are used as guidance at HE. **Preference:** No products specifically preferred. **Desired Feedback:** Describe how vendor systems and processes ensure compliance with NERC CIP-011-5 R2.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
			1	***Configuration Change Management***								
Information Only	Ideal	Core	Mandatory		Vendors may add any hyperlink to right:							
				Standard: Vendor shall ensure that change management processes are in place and utilized which adhere to NERC CIP-010-1 R1 and R2 requirements of Medium-Impact BES Cyber Assets. **Comment:** Cyber assets shall be assumed by the vendor to require compliance with NERC CIP-010-1 R2 & R2 requirements for Medium-impact BES Cyber Systems. While NERC CIP compliance is not a regulatory requirement, its provisions are good practice and are used as guidance at HE. **Preference:** No products specifically preferred. **Desired Feedback:** Describe how vendor systems and processes ensure compliance with NERC CIP-011-5 R1 and R2.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
			1	***Vulnerability Assessments***								
					Vendors may add any hyperlink to right:							
				Standard: Vendor shall ensure their development, test and product delivery environments and systems provide for vulnerability assessments consistent with NERC CIP-010-1 R3 requirements of Medium-Impact BES Cyber Systems.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations							

Information Only	Ideal	Core	Mandatory										
				Comment: Vendor lifecycle management must ensure products and services are managed in an environment which provides appropriate assurance of product integrity. This is shown by doing vulnerability assessments consistent with NERC CIP-010-1 R3 requirements of Medium-Impact BES Cyber Assets. While NERC CIP compliance is not a regulatory requirement, its provisions are good practice and are used as guidance at HE. **Preference:** No products specifically preferred. **Desired Feedback:** Describe how vendor conducts vulnerability assessments within its own environment, and mitigates identified risks, in a manner consistent with NERC CIP-010-1 R3.	should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
			1	***Systems Security Management***									
					Vendors may add any hyperlink to right:								
Information Only	Ideal	Core	Mandatory	**Standard:** Vendor shall ensure their systems and system implementation provide for compliance with all requirements of NERC CIP-007-5. **Comment:** While NERC CIP compliance is not a regulatory requirement, its provisions are good practice and are used as guidance at HE. CIP-007-5 provides guidelines for vendor products and their implementations. **Preference:** No products specifically preferred. **Desired Feedback:** Vendor shall describe how their system and its implementation provides sufficient security controls to ensure NERC CIP-007-5 compliance at the level required for Medium-Impact BES Cyber Systems.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Employee Mobile Device Applications***									
					Vendors may add any hyperlink to right:								
Information Only	Ideal	Core	Mandatory	**Standard:** Any applications intended for use by employees on mobile devices must be compatible with Hawaiian Electric's mobile device management suite. **Comment:** Testing must be done by selected vendor to confirm compatibility. **Preference:** Afaria for applications used by HE employees. **Desired Feedback:** System provider must describe how the mobile applications are compatible with HE security suite.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant							
			1	***Masking of Sensitive Data***									
					Vendors may add any hyperlink to right:								
Information Only	Ideal	Core	Mandatory	**Standard:** Regulated data, such as SSNs, financial account numbers, driver's license, and PHI shall be masked when presented on user screens and reports. Masking rules shall be configurable by user type. PINS and passwords should be stored hashed and never in clear text. **Comment:** Sensitive data such as, but not limited to, Social Security Numbers, Financial Account Numbers, drivers license numbers, Protected Health Information, etc. **Preference:** No products specifically preferred. **Desired Feedback:** System provider must describe how sensitive data will be masked, and how that masking varies by user type.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
Process Requirements						Meets	Will	3rd P	Cust	No	Other		
			1	***Vendor Support Access***									
					Vendors may add any hyperlink to right:								
Information Only	Ideal	Core	Mandatory	**Standard:** The vendor shall ensure support personnel working on HE systems or handling HE information have had background checks and been trained in cyber security guidelines & policies. **Comment:** Proper cybersecurity training, background checks, and staffing updates are necessary to avoid compromising any sensitive information. The background checks and cyber security training shall be consistent with High & Medium BES Cyber System requirements in NERC CIP-004-5.1. While NERC CIP compliance is not a regulatory requirement, its provisions are good practice and are used as guidance at HE. **Preference:** No products specifically preferred. **Desired Feedback:** The system provider shall describe its cybersecurity training and awareness procedures and frequency, and the provider shall agree to perform appropriate background checks on employees involved in the development, deployment and support of the proposed product.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.							
		1		***Patches and Updates***									
					Vendors may add any hyperlink to right:								

Information Only	Ideal	Core	Mandatory		**Standard:** All software components shall be updated in a timely manner with proof of adequate testing and documentation to install the updates and patches. See NERC CIP-007-5 R2 for standard. **Comment:** The system provider shall continue, on an ongoing basis, to identify and address any system vulnerabilities or other required fixes. These updates shall be tested and then shared with HE in a timely manner. While NERC CIP compliance is not a regulatory requirement, its provisions are good practice and are used as guidance at HE. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall explain the process by which updates and patches will be developed, tested, and deployed.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1		***Protection of Audit Logs***								
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** The system shall allow for the protection of audit logs via back-up and provisions to prevent and detect tampering with logs. **Comment:** The system shall safeguard audit logs against tampering and shall further record the administrator identify, time and impact of any modification to the logs or their settings. Log server shall reside on an isolated network segment. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall describe provisions for protection of audit logs.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1			***Incident Response Policy***								
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** The system provider must provide Hawaiian Electric a copy of its cyber-security incident response plan which address issues in a rapid, thorough manner and ensures compliance with relevant US Federal and state regulations, and coordination of response with Hawaiian Electric and other business partners as needed." **Comment:** Processes must be in place to ensure that any security breach is handled in a manner that complies with relevant US Federal and state regulations. These include Hawaii Revised Statute 487N (Security Breach of Personal Information), which requires customer notification. Any breach of the system provider's system which may compromise HE data, any unauthorized disclosure of HE data, must be reported to HE within 24 hours of incident discovery. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify that it will comply with relevant regulations in the case of a cyber-security incident that may compromise HE data. Additionally, the provider shall describe its incident response plan, how frequently the plan is tested and revised, the core response team, processes and timeline for informing customers, any associated service level agreements (SLAs), and any financial or legal commitments to HE in the case of a data breach.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
1					***Security Built into Life Cycle QA***								
						Vendors may add any hyperlink to right:							
Information Only	Ideal	Core	Mandatory		**Standard:** Vendor must describe how security QA is built into the system development lifecycle (SDLC) and is tested as part of the overall QA process. **Comment:** Effective security testing requires that appropriate assessments and tests be performed through out the SDLC before security flaws in early stage development are built into system foundations. **Preference:** No products specifically preferred. **Desired Feedback:** System provider should verify that potential security flaws are identified and security testing is performed during the SDLC process. Description should include what stages of SDLC include security testing and what types of assessments are performed (e.g., source code review, static assessment, dynamic testing, fuzz testing, scanning for malware, etc.).	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
			1		***Data Return Compliance***								
						Vendors may add any hyperlink to right:							
y					**Standard:** In compliance with HI state law, the system provider either returns or destroys all HE data at the end of its contract.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but							

Information Onl	Ideal	Core	Mandatory	**Comment:** Destruction or return of HE data at the end of the service contract is required by HI state law. See Hawaii Revised Statute 487J (Personal Information Protection), 487N (Security Breach of Personal Information), and 487R (Destruction of Personal Information Records). **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify that it will return or destroy all HE data at the end of its contract.	vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	
		1		***Data Confidentiality and Company Privacy Policy***		
					Vendors may add any hyperlink to right:	
Information Only	Ideal	Core	Mandatory	**Standard:** Vendor must provide and describe their privacy policies in place that govern data collection, sharing, and sale and will not collect, share, or sell any HE data without prior written consent. **Comment:** All HE data shall be considered confidential. If the system provider wishes to collect, share, or sell any HE data, it may only do so after receiving expressed consent through the appropriate, authorized HE personnel. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify that it will not collect, share, or sell any HE with prior written consent from authorized HE personnel. The provider shall also describe its company's privacy policy, particularly regarding data collection, storage, and sale.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	
			1	***Company Compliance Program***		
					Vendors may add any hyperlink to right:	
Information Only	Ideal	Core	Mandatory	**Standard:** The system provider has programs in place to ensure that its systems are compliant with all relevant US Federal and state privacy laws. **Comment:** In addition to other privacy laws explicitly addressed in these requirements, the system provider must ensure that its systems are compliant with all other applicable US Federal and state laws. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall verify that it is compliant with US Federal and state privacy laws. In addition, the provider shall describe the internal policies and programs that it has in place to ensure that it identifies and complies with all relevant privacy regulations.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	
		1		***Internet Domain Name Registration***		
					Vendors may add any hyperlink to right:	
Information Only	Ideal	Core	Mandatory	**Standard:** All Internet Domain Name Registrations are purchased and registered by Hawaiian Electric's ITS department. **Comment:** If new Internet domain name registrations are required these must be procured through HE, not by the vendor directly. If not applicable, bidder shall note that and describe why it is not applicable. **Preference:** No products specifically preferred. **Desired Feedback:** System provider must verify that they comply with Internet Domain name registration best practices.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	
		1		***System Interfaces***		
					Vendors may add any hyperlink to right:	
Information Only	Ideal	Core	Mandatory	**Standard:** System Interfaces must be fully documented. **Comment:** For all functions requiring integration of data between systems, provide interface details including packets types/protocols, packet sizes, expected data flow frequency and volume, source & destination systems, latency requirements, and a description of the information being transferred (payload). Also document whether data flows are unidirectional out from system being proposed, unidirectional into the system being proposed, bidirectional initiated by the system being proposed, or bidirectional initiated by systems other than the system being proposed. **Preference:** No products specifically preferred for documentation. **Desired Feedback:** Provide required interface documentation, regardless of whether the integrated systems are within the same security zone or in different security zones.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.	

Remote Host and Application Service Provider (ASP) Architecture (IF APPLICABLE)												
Remote Security							Meets	Will	3rd P	Cust	No	Other
		1		***Determination of Security Trust Level***		Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** The remote host or ASP system shall be covered by a Type II SAS70 SysTrust/WebTrust or else the host/ASP can provide an independent security assessment (attestation) report by a reputable reporting agency (e.g., PCI) that covers the ASP's application and infrastructure. **Comment:** Some independent evidence or report shall be provided to HE showing that the provider's security meets professional standards or has otherwise been evaluated. Attestation reports by a qualified professional assessment firm are preferred. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall provide copies or links to attestation reports if available.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***Data Preservation Provisions***		Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** The remote host or ASP shall provide Service Level Agreements (SLAs) regarding the frequency and assuredness of data back-ups along with the provisions and timeliness of restoration/recovery procedures. **Comment:** Documentation of service levels pertaining to data preservation shall be built into the contract or other agreement documents such as SLAs. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall provide detailed descriptions of data protection and preservation procedures.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						
		1		***System Access & Performance Requirements***		Vendors may add any hyperlink to right:						
Information Only	Ideal	Core	Mandatory	**Standard:** The remote host or ASP shall provide Service Level Agreements (SLAs) regarding the availability of the system and the required performance of the system when it is available. **Comment:** Documentation of service levels pertaining to up-time and performance requirements shall be built into the contract or other agreement documents such as SLAs. **Preference:** No products specifically preferred. **Desired Feedback:** System provider shall provide detailed commitments to mutually agreeable up-time and performance standards.	At right, enter any expanded explanation. Typically, a positive response above to the 'Proposal Meets Standard' is sufficient, but vendors may add comments as desired. Responses to any of the other variations should be explained. Also, please pay attention to the Desired Feedback text as it may suggest a helpful response comment. Explanations should be short, but vendors may also use hyperlinks above or references in text at right to highlight other relevant sections of proposal materials.						

Appendix E – Detailed Cost and Staffing Model

Appendix E contains the specific spreadsheet file that is required to be completed for each implementation scenario, and returned as part of the bidder's proposal response.

For each of the corresponding implementation scenarios (base and alternatives), please provide the corresponding separate detail cost and staffing model spreadsheets.

See electronic file called "Appendix E – Detailed Cost and Staffing Model.xlsx".

Appendix E – Detailed Cost and Staffing Model
Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Meter Data Management System (MDMS) Project, RFP No. 032714-04
Base Costs

Summary of Costs						
TOTAL LABOR COST (000's)	**Project Prep/ Planning**	**Blueprint/ Requirements**	**Realization/ Development**	**Final Prep**	**Post Go-Live**	**Total**
SERVICES: POTENTIAL SUPPLIER AND SUB-CONTRACTOR						
Project Management Fees						$ -
Functional Fees (Analysis and Remediation Support)						$ -
Technical Fees (Analysis & Remediation)						$ -
Technical Fees (Development, Reporting & Infrastructure)						$ -
Testing Fees (Unit, Integration, System, Regression, UAT Support)						$ -
Testing Fees (Performance and Stres)						$ -
Testing Fees (Privacy and Security)						$ -
Training Fees						$ -
Training Option 1						$ -
Training Option 2						$ -
All Other OCM activities						$ -
Other Fees (Please identify; add additional lines as needed)						$ -
Total Potential Supplier Labor Fees	$ -	$ -	$ -	$ -	$ -	$ -
Estimated Expenses						
Total Potential Supplier Labor Fees & Expenses	$ -	$ -	$ -	$ -	$ -	$ -
Sub-Contractor Labor Cost						
Project Management Fees						$ -
Functional Fees (Analysis and Remediation Support)						$ -
Technical Fees (Analysis & Remediation)						$ -
Technical Fees (Development & Infrastructure)						$ -
Testing Fees (Unit, Integration, System, Regression, UAT Support)						$ -
Testing Fees (Performance and Stres)						$ -
Testing Fees (Privacy and Security)						$ -
Training Fees						$ -
Training Option 1						$ -
Training Option 2						$ -
All Other OCM activities						$ -
Other Fees (Please identify; add additional lines as needed)						$ -
Total Sub-Contractor Labor Fees	$ -	$ -	$ -	$ -	$ -	$ -
Estimated Sub-Contractor Expenses						
Total Potential Supplier Labor Fees & Expenses	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL LABOR FEES & EXPENSES	$ -	$ -	$ -	$ -	$ -	$ -

Appendix E – Detailed Cost and Staffing Model
Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Meter Data Management System (MDMS) Project, RFP No. 032714-04
Base Costs

Summary of Costs						
RATES: POTENTIAL SUPPLIER AND SUB-CONTRACTOR						
Potential Supplier Blended Hourly Rate						
Resource Hourly Rate						
< repeat for each resource >						
Sub-Contractor Blended Hourly Rate						
Resource Hourly Rate						
< repeat for each resource >						
PROJECT TIMELINE						
DURATION (Weeks)						
LEVEL OF EFFORT: POTENTIAL SUPPLIER AND SUB-CONTRACTOR						
Total Potential Supplier Hours						
Onsite Resource Hours						
Offshore Resource Hours						
Total Sub-Contractor Hours						
Onsite Resource Hours						
Offshore Resource Hours						
TOTAL PROJECT HOURS: POTENTIAL SUPPLIER AND SUBCONTRACTOR	**0**	**0**	**0**	**0**	**0**	**0**
LEVEL OF EFFORT: THE COMPANIES						
< state per expected role >						
< state per expected role >						
TOTAL PROJECT HOURS: THE COMPANIES	**0**	**0**	**0**	**0**	**0**	**0**

Appendix E – Detailed Cost and Staffing Model
Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Meter Data Management System (MDMS) Project, RFP No. 032714-04
Base Costs

Summary of Costs						
SOFTWARE COST (000's)						
OPTION 1: 1 YEAR MAINTENANCE AGREEMENT	**Year 1**					**Total**
Software License Fees						$ -
Software Upgrade Fees						$ -
Software Maintenance Agreement Fees						$ -
Interface Adaptor License Fees (if not included above)						$ -
Interface Adaptor Upgrade Fees (if not included above)						$ -
Interface Adaptor Maintenance Agreement Fees (if not included above)						$ -
Additional Software Products (non-Supplier) required for the system						$ -
Software Product Name/Version < repeat for each software product >						$ -
Software License Fees < repeat for each software product >						$ -
Software Upgrade Fees < repeat for each software product >						$ -
Software Maintenance Agreement Fees < repeat for each software product >						$ -
Documentation Fees						$ -
OPTION 2: 3 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**			**Total**
Software License Fees						$ -
Software Upgrade Fees						$ -
Software Maintenance Agreement Fees						$ -
Interface Adaptor License Fees (if not included above)						$ -
Interface Adaptor Upgrade Fees (if not included above)						$ -
Interface Adaptor Maintenance Agreement Fees (if not included above)						$ -
Additional Software Products (non-Supplier) required for the system						$ -
Software Product Name/Version < repeat for each software product >						$ -
Software License Fees < repeat for each software product >						$ -
Software Upgrade Fees < repeat for each software product >						$ -
Software Maintenance Agreement Fees < repeat for each software product >						$ -
Documentation Fees						$ -
OPTION 3: 5 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Software License Fees						$ -
Software Upgrade Fees						$ -
Software Maintenance Agreement Fees						$ -
Interface Adaptor License Fees (if not included above)						$ -
Interface Adaptor Upgrade Fees (if not included above)						$ -
Interface Adaptor Maintenance Agreement Fees (if not included above)						$ -
Additional Software Products (non-Supplier) required for the system						$ -
Software Product Name/Version < repeat for each software product >						$ -
Software License Fees < repeat for each software product >						$ -
Software Upgrade Fees < repeat for each software product >						$ -
Software Maintenance Agreement Fees < repeat for each software product >						$ -

Appendix E – Detailed Cost and Staffing Model
Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Meter Data Management System (MDMS) Project, RFP No. 032714-04
Base Costs

Summary of Costs						
Documentation Fees						$ -

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Appendix E – Detailed Cost and Staffing Model
Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Meter Data Management System (MDMS) Project, RFP No. 032714-04
Base Costs

Summary of Costs						
HARDWARE COST (000's)						
OPTION 1: 1 YEAR MAINTENANCE AGREEMENT	**Year 1**					**Total**
Hardware required for the system						$ -
Hardware Name/Version < repeat for each hardware product >						$ -
Hardware Initial Cost < repeat for each hardware product >						$ -
Hardware Growth < repeat for each hardware product >						$ -
Hardware Maintenance Fees < repeat for each hardware product >						$ -
OPTION 2: 3 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**			**Total**
Hardware required for the system						$ -
Hardware Name/Version < repeat for each hardware product >						$ -
Hardware Initial Cost < repeat for each hardware product >						$ -
Hardware Growth < repeat for each hardware product >						$ -
Hardware Maintenance Fees < repeat for each hardware product >						$ -
OPTION 3: 5 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Hardware required for the system						$ -
Hardware Name/Version < repeat for each hardware product >						$ -
Hardware Initial Cost < repeat for each hardware product >						$ -
Hardware Growth < repeat for each hardware product >						$ -
Hardware Maintenance Fees < repeat for each hardware product >						$ -
HOSTED SERVICES COST (000's) (IF HOSTED ALTERNATIVE PROVIDED)						
OPTION 1: 1 YEAR MAINTENANCE AGREEMENT	**Year 1**					**Total**
Hosting Setup Fees						$ -
Hosting Base Configuration Fees						$ -
Hosting Service Fees						$ -
Hosting Support Fees						$ -
OPTION 2: 3 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**			**Total**
Hosting Setup Fees						$ -
Hosting Base Configuration Fees						$ -
Hosting Service Fees						$ -
Hosting Support Fees						$ -
OPTION 3: 5 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Hosting Setup Fees						$ -
Hosting Base Configuration Fees						$ -
Hosting Service Fees						$ -

Appendix E – Detailed Cost and Staffing Model
Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Meter Data Management System (MDMS) Project, RFP No. 032714-04
Base Costs

Summary of Costs						
Hosting Support Fees						$ -

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Appendix F – EPMO Standards and Sample Templates

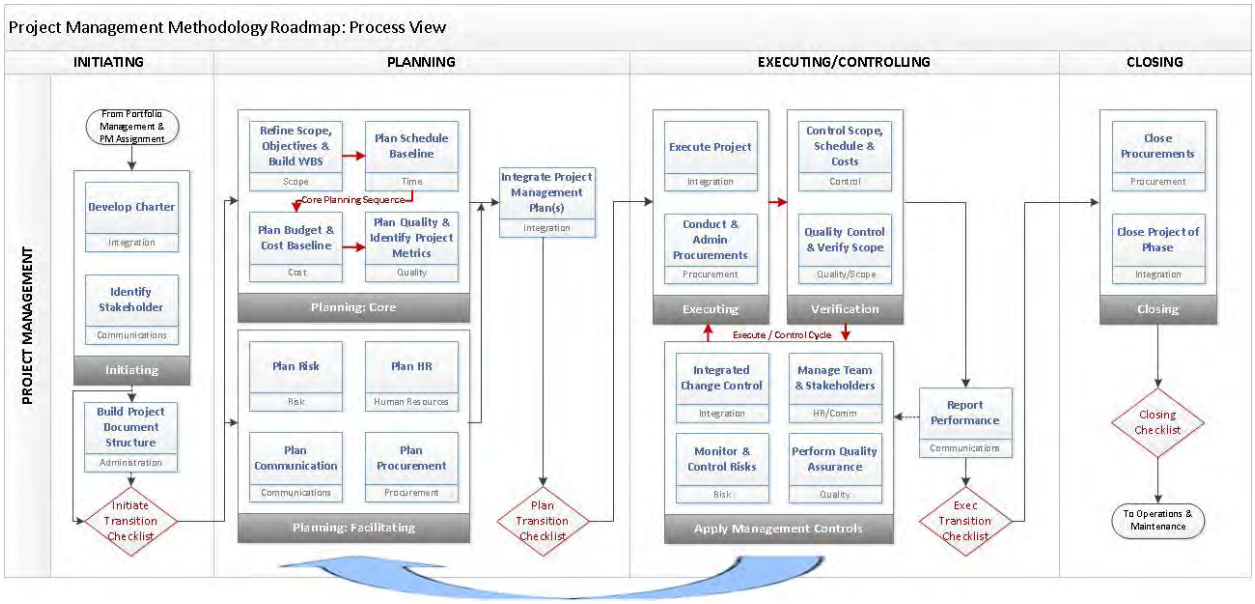
Appendix F contains the primary Enterprise Project Management Office standards and same templates as a reference for expectations per the level of required project management artifacts related to this implementation.

See electronic document called “Appendix F - EPMO Standards and Sample Templates.docx”.

The following components from the HECO EPMO will be reviewed and adjusted as needed per collaborative agreements made between both parties in the project management phase. Note that for this Project many of the templates will be systematized in Solution Manager. This document is provided purely as a sampling of EPMO standards. The full EPMO standards are housed in HECO's online PM Resource Center.

High Level Project Management Methodology

The EPMO Project Methodology is based on the Project Management Institute (PMI) PM Book Of Knowledge (collectively referred to as the HECO PMBOK). This framework is specifically adjusted to fit the HECO business model and current organization capability maturity level. Below is the high level general process cycle for the applied project management methodology:



Project Charter

The following template is the current HECO Project Charter template version to be used for recording and obtaining overall project initiation approval.

Contents

PROJECT IDENTIFICATION 1
PROJECT OVERVIEW 1
STRATEGIC GOALS / INITIATIVE 2
PROJECT GOVERNANCE 2
INITIAL RISK ASSESSMENT 3
PROJECT MAJOR MILESTONES & DELIVERABLES 3
PROJECT BUDGET 3
MAJOR STAKEHOLDERS 4
LABOR RESOURCE EXPECTATIONS 4
OTHER NOTES 4
APPROVALS 5

PROJECT IDENTIFICATION

Project Name	Project Number

Project Description *Describe the project in one paragraph with one to four sentences*

Project Sponsor	Title	Project Sponsor Representative	Title

Project Manager	Target In Service Date

Company (HECO, HELCO, MECO)	Responsible Process Area

PROJECT OVERVIEW

Current Situation *Important Historical Background and "As-is" situation*

Proposed Solution *Describe the "To Be" situation – What the project will deliver; the solution to the functional/operating need.*

Project Assumptions
•

PROJECT OVERVIEW

Project Constraints

-

Project Scope and Description
EXECUTIVE SUMMARY OF PURPOSE AND FUNCTION

Out of Scope

STRATEGIC GOALS / INITIATIVE

Describe the specific Strategic goals that this project is aligned to.

Aligned with the following goals and objectives of Hawaiian Electric's "Embracing Change" strategy.

-
-
-

PROJECT GOVERNANCE

The Project shall be governed in compliance with existing policies, processes, and procedures. Outline the decision rights / authority of the Executive Steering Group (if any), the Sponsor, the Sponsor Rep (if any) and the Project Manager.

Executive Steering Group (if applicable to the project) **Level**

-
-

Sponsor Level

-
-

Sponsor Rep (if applicable to the project) **Level**

-
-

Project Manager Level

-
-

INITIAL RISK ASSESSMENT

Major Risks with High Impact and Medium/High Probability

Project Internal Risks (in Scope, Design, Labor Resources, Cost, Schedule)
▪
▪
External Risks (such as Regulatory, Permitting, Community Considerations and other Inter-dependencies)
▪
▪

PROJECT MAJOR MILESTONES & DELIVERABLES

Indicate the major deliverables

Project Definition and Description	**Deliverables**
▪	▪
▪	▪
▪	▪
▪	▪
▪	▪
▪	▪

PROJECT BUDGET

Overview of estimated costs by project.. Projects are not empowered to spend funds until appropriate policies and procedures have been followed and the funds are authorized. The authorized amounts may vary significantly from the estimates below.

PUC Expectations and Recovery of Costs

Project / Category	**Estimated Costs**
Total	

MAJOR STAKEHOLDERS

Major groups which may be involved in, affected by, or show an interest in the project.

-

LABOR RESOURCE EXPECTATIONS

Labor resource plan (i.e. internal, external, billable) as well as anticipated issues/conflicts

-

OTHER NOTES

Other References or Pertinent Information not included above

-

APPROVALS			
Name	**Project Title**	**Date**	**Signature**
	Project Sponsor		
	Project Sponsor Rep.		
	Project Manager		

Integrated Project Plan

The following template is the current HECO Integrated Project Plan template version to be used for the execution of the overall project management plan.

INTEGRATED PROJECT MANAGEMENT PLAN

Table of Contents

1. PROJECT IDENTIFICATION 3
2. PROJECT OVERVIEW 3
3. SCOPE MANAGEMENT 4
3.1 PROJECT SCOPE STATEMENT 4
3.2 SCOPE MANAGEMENT PLAN 5
4. TIME MANAGEMENT 5
4.1 WORK BREAKDOWN STRUCTURE (WBS) 5
4.2 SCHEDULE 6
4.3 SCHEDULE MANAGEMENT PLAN 7
5. COST MANAGEMENT 7
5.1 COST MANAGEMENT PLAN 7
5.2 COST ESTIMATES AND PROPOSED BUDGET 7
1. RISK MANAGEMENT 8
1.1 RISK MANAGEMENT PLAN 8
1.2 RISK REGISTER 8
2. QUALITY MANAGEMENT 9
2.1 QUALITY MANAGEMENT PLAN 9
3. HUMAN RESOURCE MANAGEMENT 9
3.1 HUMAN RESOURCE PLAN 9
3.2 ROLES AND RESPONSIBILITIES MATRIX 9
3.3 PROJECT GOVERNANCE AND DECISION RIGHTS (RACI) MATRIX 10
3.4 RESPONSIBILITY ASSIGNMENT MATRIX (RAM) 11
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4. COMMUNICATIONS MANAGEMENT 12
4.1 STAKEHOLDER REGISTER 12
4.2 COMMUNICATIONS MANAGEMENT PLAN 12
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5.1 PROCUREMENT MANAGEMENT PLAN 13

5.2 LINKS TO OTHER PROCUREMENT DOCUMENTS 13

6. CHANGE MANAGEMENT PLAN 14

7. LINKS TO OTHER PROJECT DOCUMENTS 14

8. APPROVAL SIGNATURES OF INTEGRATED PROJECT MANAGEMENT PLAN 14

1. PROJECT IDENTIFICATION

Project Name	Project Number

Project Description

Describe the project in one paragraph with one to four sentences

32T

Project Manager		Target In-Service Date	
Project Sponsor	**Title**	**Project Sponsor Representative (if any)**	**Title**
Company (HECO, HELCO, MECO)		**Responsible Process Area / Department / Division**	

2. PROJECT OVERVIEW

Background & Current Situation

Summarize the historical background and "as-is" situation in one paragraph.

Project Objectives

Describe the project's objectives.

-
-

Strategic Alignment

Describe what strategic goals will be supported by these project objectives.

-
-

Project Approach & Proposed Solutions

Summarize the proposed project approach and solutions in one paragraph.

3. SCOPE MANAGEMENT

3.1 Project Scope Statement

Describe the scope of the project

☐ The Project Scope Statement is a standalone document. The location address is:

☐ The Project Scope Statement is described below.

Scope Description

Describe the major characteristics of the product or services the project will deliver in one paragraph.

Out of Scope

Call out what will not be included in the scope of the current project or phase to help clarify the boundary of the project scope.

-
-

Project Assumptions

Describe assumptions of the project if any. All assumptions should be verified during the planning process, and reviewed during risk identification.

-
-

Project Constraints

Describe known constraints (e.g. time, budget, regulations, or safety) of the project if any. Known constraints become part of the boundary of the project scope.

-
-

Major Deliverables

Describe the major deliverables or categories of deliverables of the project.

-
-

3.2 SCOPE Management Plan

Describe how the scope of the project will be planned, managed and controlled.

☐ The Scope Management Plan is a standalone document. The location address is:

☐ The Scope Management Plan is described below.

4. TIME MANAGEMENT

4.1 Work Breakdown Structure (WBS)

All the work required to complete the project, including the deliverables and all activities required to produce each deliverable. The approved WBS will become the Scope Baseline of the project.

☐ The WBS is a standalone document. The location address is:

☐ The WBS is described below.

WBS No.	Description
1	
1.1	
1.2	
1.3	
1.4	
2	
2.1	
2.2	
2.3	
2.4	
3	
3.1	
3.2	
3.3	

3.4	
4	
4.1	
4.2	
4.3	

4.2 Schedule

The schedule for all activities and milestones of the project, including the sequence, duration and resources of the activities, in order to produce the project deliverables. The approved Schedule will become the Schedule Baseline of the project.

☐ The Schedule is a standalone document. The location address is:

☐ The Schedule is described below.

WBS No.	WBS Description	Resource Name	Target Start Date	Target End Date	Predecessor WBS No. (if any)	Status	% Complete
1							
1.1							
1.2							
1.3							
1.4							
2							
2.1							
2.2							
2.3							
2.3							
3							
3.1							
3.2							
3.3							
3.4							
4							

4.1							
4.2							
4.3							

4.3 SCHEDULE Management Plan

Describe how the schedule of the project will be developed, managed and controlled.

☐ The Schedule Management Plan is a standalone document. The location address is:

☐ The Schedule Management Plan is described below.

5. COST MANAGEMENT

5.1 COST Management Plan

Describe how the costs and budget of the project are estimated, managed and controlled.

☐ The Cost Management Plan is a standalone document. The location address is:

☐ The Cost Management Plan is described below.

5.2 Cost Estimates and Proposed Budget

Summarize the project cost and budget. The approved Budget will become the Cost Baseline of the project.

☐ The Cost Estimates and Proposed Budget are a standalone document. The location address is:

☐ The Cost Estimates and Proposed Budget are described below.

WBS Category	Estimated Cost ($)	Risk Assessed?	Adjustment for Risk Included?
1 WBS Category Description		☐	☐
2 WBS Category Description		☐	☐
3 WBS Category Description		☐	☐
4 WBS Category Description		☐	☐

		☐	☐
Total Budget			

PUC Expectations and Recovery of Costs

Describe whether PUC approval is required and how the project cost will be recovered

1. RISK MANAGEMENT

1.1 RISK Management Plan

Describe how the risks of the project will be identified, mitigated, monitored and accounted for.

☐ The Risk Management Plan is a standalone document. The location address is:

☐ The Risk Management Plan is described below.

1.2 Risk Register

Document the list of risks that may impact the scope, schedule, cost and quality of the project, and each risk's priority ranking, probability (%), cost or schedule impact, response strategy and any adjustment for risk

☐ The Risk Register is a standalone document. The location address is:

☐ The Risk Register is described below.

Risk Description	Risk Category	Priority Ranking	Risk Response Strategy	Risk Response Included in Scope?	Adjustment for Risk Amount if any
				☐	
				☐	
				☐	
				☐	

2. QUALITY MANAGEMENT

2.1 QUALITY Management Plan

Describe how the quality of the project will be planned, managed and controlled. Include the quality standards and success criteria that will be used to measure the quality, as well as how quality will be built into the process.

☐ The Quality Management Plan is a standalone document. The location address is:

☐ The Quality Management Plan is described below.

Deliverable	Quality Standards and Success Criteria	Quality Control Owner	Quality Control Included in WBS?
			☐
			☐
			☐
			☐

3. HUMAN RESOURCE MANAGEMENT

3.1 HUMAN RESOURCE Plan

Describe how the internal and outside labor resources will be planned, utilized and managed for the project. Also summarize the labor resource needs of the project.

☐ The Human Resource Plan is a standalone document. The location address is:

☐ The Human Resource Plan is described below.

3.2 Roles and Responsibilities Matrix

Define the roles and responsibilities of Project Manager, Sponsor and team members

☐ The Roles and Responsibilities Matrix is a standalone document. The location address is:

☐ The Roles and Responsibilities Matrix is described below.

Role	Description of Responsibilities	Name(s)	Contact Info
Sponsor			
Project Manager			
Sponsor Rep (if any)			
Executive Steering Group (if any)			

3.3 Project Governance and Decision Rights (RACI) Matrix

Define how project decisions will be made by describing what decision rights (Responsible, Approve, Consult, Inform) each role will have.

☐ The Project Governance & RACI Matrix is a standalone document. The location address is:

☐ The Project Governance & RACI Matrix is described below.

For each type of decision, indicate who has the following decision rights, R (Responsible), A (Approve), C (Consult), and I (Inform), as appropriate:

Type of Decision	Sponsor	Project Manager	Sponsor Rep (if any)	Executive Steering Group (if any)	Comments

3.4 Responsibility Assignment Matrix (RAM)

Identify the assignments (Owner, Participant, Expert Resource, Reviewer, Approver) for each activity in the WBS

☐ The Responsibility Assignment Matrix is a standalone document. The location address is:

☐ The Responsibility Assignment Matrix is described below.

For each WBS activity, indicate who has the following assignments, O (Owner), P (Participant), E (Expert Resource), R (Reviewer) and A (Approver), as appropriate:

WBS # and Description	Due Date	Person 1	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7
1 Description								
1.1 Description								
1.2 Description								
1.3 Description								
1.4 Description								
2 Description								
2.1 Description								
2.2								
2.3								
2.4								
3								
3.1								
3.2								
3.3								
3.4								
4								
4.1								
4.2								
4.3								
4.4								

3.5 Project Organizational Chart

Describe all members of the project team and the structure in a graphical format.

☐ The Project Organizational Chart is a standalone document. The location address is:

☐ The Project Organizational Chart is described below.

4. COMMUNICATIONS MANAGEMENT

4.1 Stakeholder Register

Identify all stakeholders who may be negatively or positively impacted by the project, and to whom communication about the project needs to be provided

☐ The Stakeholder Register is a standalone document. The location address is:

☐ The Stakeholder Register is described below.

Stakeholder	How will the stakeholder be impacted by the project	How the stakeholder should be managed and communicated to	Contact Info

4.2 COMMUNICATIONS Management Plan

Describe all project communication events and the 'what', 'to whom', format, 'how often', 'from whom' of each communicate event.

☐ The Communications Plan is a standalone document. The location address is:

☐ The Communications Plan is described below.

Communication Event	To Whom (Stakeholder)	Communication Format	How Often	From Whom

5. PROCUREMENT MANAGEMENT

5.1 PROCUREMENT Management Plan

Identify the areas in the scope where external materials, labor resources or services will be used for the project, and how the procurement of them will be planned, executed and managed.

☐ The Procurement Management Plan is a standalone document. The location address is:

☐ The Procurement Management Plan is described below.

5.2 Links to Other Procurement Documents

Add links to important procurement documents such as Statement of Work or Request for Proposals, as appropriate.

Store the procurement documents in the proper location in the project documentation structure and include the location address to them below. Add more rows to the table as appropriate.

Name of Procurement Document	Location Address

6. CHANGE MANAGEMENT PLAN

Describe how changes to the project Scope, Schedule and Cost Baselines will be monitored, controlled, reviewed and approved. Also describe how project performance and status will be reported.

☐ The Change Management Plan is a standalone document. The location address is:

☐ The Change Management Plan is described below.

7. LINKS TO OTHER PROJECT DOCUMENTS

Add links to any other project documents that should be made part of the Integrated Project Management Plan, as appropriate.

Store the project documents in the proper locations in the project documentation structure and include the location address to them below. Add more rows to the table as appropriate.

Name of Project Document	Location Address

8. APPROVAL SIGNATURES OF INTEGRATED PROJECT MANAGEMENT PLAN

Add more rows to the table as appropriate.

Role	Name	Title	Signature	Date
Project Manager				
Sponsor				

Project Issue Log

The following template is the current HECO Project Issue Log template version for the tracking and documentation of project issues.

Hawaiian Electric Company
Maui Electric Company
Hawaii Electric Light Company

Project Issue Log

Project Name

Issue Status Summary						Issue Information			Requestor			Close Date	
Issue ID	Category	Title (Deliverable)	Owner	Comments & Resolution	Status	WBS #	Issue Description & Impact	Priority	Requestor	Date Created	Date Requested to Close	Date Estimate to Close	Date Actual Close

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Project Change Request

The following template is the current HECO Project Change Request (PCR) template version to be used for the execution of the overall project change requests.

A. General Information

Project Name:	***<Insert Project Name>***		
Title of CR:			
Date Submitted:	35T	Change Request ID:	**CR-xxx**
Requested by:	Your Name/CR initiator	Sponsor**:**	Sponsor Name
Submitted by:	person writing this request	Assigned Owner**:**	Owner identified by PM
Priority:			

B. Change Request Information

The requester provides information concerning the requested change along with any supporting documentation**.**

Proposed Change Description:
Describe the proposed change - a summary version of this is entered into the Change Control Log in "Summary Description." The requester provides the information in this section concerning the requested change along with any supportive documentation.
Proposed Change Justification & Impact of Not Implementing Proposed Change:
Provide a justification for the proposed change and explain the impact of not implementing the proposed change - a summary version of this is entered into the Change Control Log in "Summary Impact if not implemented."
Alternatives:
Identify other actions that may be taken as an alternative to making the proposed change.

C. Change Request Analysis

The change requester or designated owner provides an explanation of the impact that this change will have on the project.

Impact on Budget (Implementation Estimate in Dollars):
Detail the impact of implementing the change to the Project Budget.
Impact on Schedule (Implementation Estimate in Days):
Detail the impact of implementing the change to the Project Schedule.
Describe Impact on other Project Resources:
Detail the impact of implementing the change to other project resources; include other interdependencies within the project or program and additional risks that may result because of the change.

D. Change Request Review

The Project Manager, Program Manager, or other designated Manager acting as the Project Manager conducts an initial review with the project team and subject matter experts and makes a recommendation(s) regarding the implementation of the request before it is proposed to the established Change or Configuration Management Review Body. Results and recommendations based on the review are provided in this section.

Review Date:	35T
Project Manager:	name
Review Team Members:	name

Review Recommendation:			
☐ **APPROVE**	☐ **DEFER**	☐ **CANCEL**	☐ **REJECT**

Rational for Recommendation:

E. Change or Configuration Management Review Body Decision

The Change or Configuration Management Review Body conducts a final review with the Project Manager and decides to approve or disapprove the request. In the blocks below record and authenticate the decision.

Approval or Disapproval and Special Instructions:			
Final Decision:			
☐ **APPROVE**	☐ **DEFER**	☐ **CANCEL**	☐ **REJECT**

Change or Configuration Management Reviewing Body Attendees:

Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	

Project Management Document Updates:
Identify the project management documentation that will be updated to incorporate the change, exclude the Change Log as this shoudl always be updated.

Hawaiian Electric Company
Maui Electric Company
Hawaii Electric Light Company

Change Control Log

Project Name

Change Request Status Summary					Change Request Information						Requester			
Change ID	Title	Owner	Update & Comments	Status	WBS #	Summary Description	Summary Impact if not Implemented	Implementation Estimate (Dollars)	Implementation Estimate (Days)	Priority	Requester	Date Submitted	Analysis Complete Date	Review Date
			mm/dd/yy [Initials] – action/update											

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Project Status Report

The following template is the current HECO Project Status Report (PSR) template version to be used for the execution of the overall project status reporting; which includes Earned Value Management (EVM) reporting.

PRC Dashboard Project Status Sheet

Project title

Hawaiian Electric Company (HECO)

as of 1/27/2012

Program Sponsor:	N/A	***Program Manager:***	N/A
Program Name (if Applicable):	N/A	***Grandparent Proj No.:***	
Program Description:	N/A		

Project Sponsor:	N/A	Project Sponsor Rep:	N/A	Project Manager:	
				Project No.:	

Overall

Enter comment on overall performance.

Strategic Goal	O1 - Renewables
Initiative	
Responsible Area	Energy Delivery
Project Funding	Capital Project/Program
Authorization	Implementation/Construction
PUC Status	Application Discovery / IR
Project Phase	Executing
Project Activity	Active

Time

Enter comment on Time performance.

% Complete		***Project Milestones***	
Sched. Perf. Index (SPI)		*Enter Milestone Info here*	*Target Date*
PUC Approval Date	*xx/xx/xxxx*	*Milestone 1*	*xx/xx/xxxx*
PRC Authorized Date	*xx/xx/xxxx*	*Milestone 2*	*xx/xx/xxxx*
PUC Plan In-Service	*xx/xx/xxxx*	*Milestone 3*	*xx/xx/xxxx*
Actual Construct. Start	*xx/xx/xxxx*	*Milestone 4*	*xx/xx/xxxx*
Forecasted In-Service	*xx/xx/xxxx*	*Milestone 5*	*xx/xx/xxxx*
Actual In-Service	*xx/xx/xxxx*	*Milestone 6*	*xx/xx/xxxx*

Cost ($M)

Enter comment on Cost performance.

Acutal cost as of	*xx/xx/xxxx*	*Actual Cost (AC)*	
PUC Amount		*Earned Value (EV)*	
Additional		*Planned Value (PV)*	
Total Budget		***Cost Perf. Index (CPI)***	
Est. at Compl. (EAC)		*Var. at Compl (VAC)*	
EAC Formula			
Comments on Cost			

Project Description	***Schedule Variance / Time & Dependency Comments***	***Budget Variance / Cost Comments***

Quality

Enter comment on Quality management.

Risk

Enter comment on Risk management status.

Misc.

Enter comment on Misc. issues.

New News This Month	

EXHIBIT E
ATTACHMENT 3
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Project Earned Value Management (EVM)

HECO EPMO requires that all projects are evaluated based on a quantitative industry standard project performance measure. EVM provides a quantitative basis for estimating actual completion time and actual cost at completion. Definitions provided below. It is expected that EVM be used in this project to show project progress.

Metric	Abbrev.	Interpretation	Description	Formula/Value
Budget at Completion	**BAC**	How much did you BUDGET for the TOTAL JOB?	Baseline cost for 100% of project.	N/A
Actual Cost of Work Performed or Actual Costs	**ACWP or AC**	What is the actual cost incurred?	Total costs actually incurred so far.	N/A
Budgeted Cost of Work Performed or Earned Value	**BCWP or EV**	What is the estimated value of the work actually accomplished?	Amount of budget earned so far based on physical work accomplished, without reference to actual costs.	N/A
Budgeted Cost of Work Scheduled or Planned Value	**BCWS or PV**	What is the estimated value of the work planned to be done?	The budget for the physical work scheduled to be completed by the end of the time period.	N/A
Cost Variance	**CV**	What is the dollar amount variance?	Measure of cost overrun. The difference between the budget for the work actually done so far and the actual costs so far.	Budgeted Cost of Work Performed–Actual Cost of Work Performed BCWP-ACWP
Cost Performance Index	**CPI**	What percent of cost is the project performing at?	Cost efficiency ratio. A CPI of 1.00 means that the costs so far are exactly the same as the budget for work actually done so far.	Budgeted Cost of Work Performed/ Actual Cost of Work Performed BCWP/ACWP
Schedule Variance	**SV**	What is the measure of time variance?	Measure of schedule slippage. The difference between the budget for the work actually done so far and the budgeted cost of work scheduled.	Budgeted Cost of Work Performed–Budgeted Cost of Work Sceduled BCWP–BCWS
Schedule Performance Index	**SPI**	What percent of schedule is the project performing at?	The schedule efficiency ratio. An SPI of 1.0 means that the project is exactly on schedule.	BCWP/BCWS
Estimate to Completion	**ETC**	From this point on, how much MORE do we expect it to cost to finish the job?	The expected additional cost to complete.	Estimate at Completion–Actual Cost Work Performed EAC–ACWP
Estimate at Completion	**EAC**	What do we currently expect the TOTAL project to cost?	Expected total cost based on the current cost efficiency ratio.	BAC/CPI[1]
				AC + BAC - EV[2]
				AC + (BAC - EV) / CPI[3]
				AC + ETC[4]
Variance at Completion	**VAC**	How much over or under budget do we expect to be?	Estimated cost overrun at the end of project.	Budget at Completion–Estimate at Completion BAC–EAC
Status		calculation of the current status in time	Average of CPI & SPI.	(Cost Performance Index+Schedule Performance Index)/2 (CPI+SPI)/2

[1]Used if no variances from the BAC have occurred

[2]Actual to date plus remaining budget. Used when current variances are atypical.

[3]Actual to date plus remaining budget modified by performance. When current variances are typical.

[4]Actual plus a new estimate for remaining work. Used when original estimate was fundamentally flawed.

GREEN = On track	**>1.0**
YELLOW = Slightly behind schedule or budget	**>0.85**
RED = Needs immediate attention	**>0.65**
BLACK = Killed or Restore	**<0.65**

Appendix G – Technology Consulting Master Services Agreement

See electronic document called “Appendix G – Technology Consulting Master Services Agreement.docx”.

FORM OF

TECHNOLOGY CONSULTING MASTER SERVICES AGREEMENT

BETWEEN

HAWAIIAN ELECTRIC COMPANY, INC.,

AND

[CONSULTANT]

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EXHIBITS TO THE TECHNOLOGY CONSULTING MASTER SERVICES AGREEMENT

No.	Exhibit Name
1.	Definitions
2.	Form of Work Authorization

THIS TECHNOLOGY CONSULTING MASTER SERVICES AGREEMENT (the "**Master Agreement**") is made on **[DATE] ("Effective Date")**, by and between **HAWAIIAN ELECTRIC COMPANY, INC., and its subsidiaries, HAWAI'I ELECTRIC LIGHT COMPANY (HAWAI'I ELECTRIC LIGHT) and MAUI ELECTRIC COMPANY, LIMITED (MAUI ELECTRIC)** (hereinafter collectively referred to as ("**The Companies**"), a Hawaii corporation, whose principal place of business and address is 900 Richards Street, Honolulu, Hawaii 96813, and whose mailing address is P.O. Box 2750, Honolulu, Hawaii 96840-0001 and **[NAME OF CONSULTANT**] (hereinafter "**Provider**"), whose principal place of business is [**ADDRESS**], and whose mailing address is **[ADDRESS].**

W I T N E S S E T H:

WHEREAS, Company is in the business of generation, transmission, and distribution of electrical power in the State of Hawaii; and

WHEREAS, Company requires certain technology consulting services to be accomplished from time to time for its business operations; and

WHEREAS, Provider is in the business of performing technology consulting services as needed by Company; and

WHEREAS, Provider represents that it is equipped and has the skills and expertise necessary to perform the particular technology consulting services required under this Master Agreement,

NOW, THEREFORE, in consideration of these premises and of the mutual promises herein contained, Company and Provider hereby agree that Provider will perform services for Company under the following terms and conditions:

1. APPLICATION OF THIS MASTER AGREEMENT

1.1. Purpose and Contract Documents

(a) Purpose - The purpose of this Master Agreement is to set forth the terms and conditions applicable to the services or work provided by Provider for Company pursuant to Work Authorizations issued hereunder.

(b) Contract Documents - The documents that shall govern the Services consist of (i) the provisions set forth in this Master Agreement; (ii) the applicable Work Authorization; (iii) the Statement(s) of Work ("**SOW(s)**") describing specific Services to be provided to Company incorporated into the applicable Work Authorization; and (iv) all Exhibits attached to or incorporated in the foregoing (collectively, the "**Contract Documents**").

(c) Conflicts and Order of Precedence - In the event of a conflict between the Contract Documents, precedence shall be in the following order, unless otherwise agreed upon in writing by both parties in a specific Contract Document: Master Agreement, Work Authorization, SOW and then Change Order.

(d) Change Orders – If changes to any Work Authorization entered into hereunder and/or to the SOW or any Exhibits thereto are desired, it is understood that any such changes shall be evidenced by a Change Order, which shall not be valid until signed by authorized representatives of both parties. Any Change Order that will result in a Price increase or any other material modification of the Contract Documents must comply with the Authority to Issue levels set forth in Section 1.2(f) (Authority to Issue) below.

1.2. Specific Contracts; Work Authorization Process

(a) Request for Quote - During the term of this Master Agreement, the Company may from time to time issue a Request for Quote in the form of Exhibit 2 (Form of Work Authorization), Section I (Request for Quote) for certain specific Services to be performed by Provider under the terms and conditions contained in the Master Agreement, the Work Authorization(s), SOW(s) and/or any Exhibits thereto.

(b) Provider's Proposal - If Provider desires to do the requested Services, it will fill out Section II (Provider's Proposal) of Exhibit 2 (Form of Work Authorization). Such a response shall constitute an affirmative representation by Provider that it is equipped and has the expertise necessary to perform the specific Services requested in the Request for Quote.

(c) Work Authorization - If Company desires to have the Services performed by Provider, it will issue a Work Authorization by executing Section III (Work Authorization) of Exhibit 2 (Form of Work Authorization) and delivering it to Provider for countersignature. Once executed by both parties, such document shall be referred to as a "**Work Authorization**."

(d) Specific Contract - Each executed Work Authorization shall constitute a specific contract, which shall be governed by the SOW attached to such Work Authorization and the terms and conditions of this Master Agreement.

(e) Description of Services - The Services will be specifically described in the SOW(s) incorporated into the Work Authorization(s) executed by the Parties hereunder during the Term.

(f) Authority to Issue - The following are the only Company individuals authorized to sign Section III (Work Authorization) of Exhibit 2 (Form of Work Authorization) and thereby issue Work Authorizations hereunder and may do so only up to the stated limits for each Work Authorization:

Manager - Up to $100,000

Officer - Up to $250,000

Two Officers - Greater than $250,000

1.3. Definitions

In the Master Agreement (including the Work Authorization(s), each SOW and the Exhibits hereto), all capitalized terms shall have the meanings set forth in the "Definitions" Exhibit. Other capitalized terms defined elsewhere in the Contract Documents shall have the meaning ascribed to such terms when capitalized throughout the Contract Documents.

2. TERM OF MASTER AGREEMENT

2.1. Term of Master Agreement

The Term of this Master Agreement will begin as of the Effective Date and will expire on **[DATE]**; provided, however, that said Master Agreement shall continue to be effective as to any outstanding Services under a Work Authorization issued prior to that expiration date.

3. THE SERVICES

3.1. Obligation to Provide Services

(a) Obligation to Provide Services - Starting on the applicable Commencement Date(s) and continuing during the Term, Provider shall provide the Services to, and perform the Services for, Company in accordance with the Contract Documents.

(b) Responsibilities - Provider and Company will perform their respective duties, obligations and responsibilities ("**Responsibilities**") set forth in the Contract Documents. Company's failure to perform a Responsibility will excuse Provider's obligation to perform its corresponding obligations under this Master Agreement only if Provider provides notice to Company, in writing, of such failure within twenty four (24) hours of its occurrence and demonstrates that: (i) Company's failure was the direct cause of Provider's inability to perform; and (ii) Provider could not have continued performance by using commercially reasonable methods, activities and procedures. In the event that Provider satisfies the conditions described in the immediately preceding sentence, Provider will be excused from the performance of those Services impacted by Company's failure to perform only to the extent that, and for so long as, Company's failure to perform its Responsibilities prevents Provider's performance, and provided that Provider takes reasonable steps to mitigate the effects of Company's failure to perform. Company shall not be liable to Provider for any such failure by Company to perform a Responsibility and Provider's sole remedy shall be the excuse provided for in this paragraph.

3.2. Compliance

(a) Laws - Provider shall comply with applicable Laws governing the Services.

(b) Security and Company Rules - When on Company premises or carrying out Provider's duties for Company, Provider personnel shall comply with all applicable provisions of Company's Corporate Code of Conduct, Company's security regulations, information resource policies, Company's Cyber Security Procurement Requirements for Business Systems, Company's Health and Safety Manual, and all other applicable Company policies and practices that Company personnel and consultants are now or during the Services are asked to follow ("**Company Rules**"). Such Company Rules will be provided to Provider before commencement of Services or shall be provided to Provider at any time upon Provider's request. Provider shall advise its employees and contractors of these Company Rules and secure their consent to abide by the Company Rules. Unless otherwise agreed to by the Parties, Provider's personnel shall observe the working hours of Company while working on Company's premises. Provider agrees to cooperate fully and to provide any assistance necessary to Company in investigation of any security breaches which may involve Provider, its Affiliates, subcontractors or their employees or contractors.

3.3. Development and Maintenance of Documentation

In conjunction with the provision of the Services and delivery of any Work Product, Provider will be responsible for the accurate and proper preparation of, to the extent such materials have not been previously delivered to Company, any other software and materials (in both print and electronic formats), including without limitation, flow charts, schematics, user guides, and technical specifications but excluding commercially available compiler programs and utilities, necessary to allow Company, when employing reasonably skilled people, to use the Services and the Work Product. Provider will perform its obligations under this section at no additional cost to Company.

3.4. Performance and Service Levels

Provider agrees that the performance of the Services will meet or exceed each of the applicable Service Levels set forth in the "Service Level Agreement" attached to the Work Authorization and/or SOW, subject to the limitations and in accordance with the provisions set forth in the Contract Documents.

3.5. Provider to Provide and Manage Necessary Resources

Except as otherwise expressly provided in the Price set forth in the Work Authorization and/or SOW, Provider will have the responsibility and obligation to provide and administer, manage, support, maintain and pay for all resources (including personnel, hardware, software, facilities, services and other items, however described) necessary or appropriate for Provider to provide, perform and deliver the Services as required by the Contract Documents.

3.6. Coordination and Cooperation

The Services will be performed in conjunction with other operations at Company's premises. Provider shall cooperate with Company and its other contractors to the extent reasonably possible to avoid delays or hindrances of the Services as well as other operations, construction or work at the Project Site. In case of disagreement or disputes regarding the scheduling of the Services by Provider's subcontractors, if any, or between two contractors or two subcontractors at the Project Site, the Company's Project Manager shall be consulted and his or her decisions as to the proper methods for coordinating the Services shall be final.

3.7. Reports

Provider will provide those reports identified in the SOW(s) and other Contract Documents, and such additional reports as agreed by the Parties, or as reasonably requested by Company, from time to time during the Term ("**Reports**"), in accordance with the requirements (including any timing requirements) set forth therein.

4. PRICE; INVOICES; AND PAYMENTS

4.1. Price

Company agrees to pay to Provider the Price as specified in the "Price" Exhibit attached to the Work Authorization(s) and/or SOW, together with the other amounts as described in this Article 4 (Price; Invoices; and Payments).

4.2. Taxes

(a) Responsibility - Each Party will be responsible for its own income taxes, employment taxes and property taxes. Provider assumes exclusive liability for all contributions, taxes or payments required to be made because of persons hired, employed or paid by Provider by the federal and state Unemployment Compensation Act, Social Security Acts and all amendments, and by all other current or future acts, federal or state, requiring payment by the Provider on account of the person hired, employed, or paid by Provider for Services performed under the Contract Documents. Sales, use and excise taxes applicable to the value or use of any property incorporated, furnished, or otherwise supplied by Provider shall be stated separately from the Price or rates specified under Section 4.4(a)(Price), and shall not be included in any computation of profit allowed by the Contract Documents. Provider assumes exclusive liability for all such taxes charged or chargeable upon any such goods or materials supplied by Provider pursuant to each specific Work Authorization.

(b) Cooperation - The Parties agree to reasonably cooperate with each other to enable each to more accurately determine its own Tax liabilities and to minimize such Taxes incurred in connection with this Master Agreement to the extent legally possible. Provider's invoices shall separately state the amount of any Taxes Provider is collecting from Company in accordance with the terms of the "Price" Exhibit attached to the Work Authorization(s) and/or the SOW.

4.3. Tariffs, Duties and Import/Export Compliance and Fees

Provider shall be responsible for all tariffs, duties and import/export compliance and fees with respect to the Services, including timely and properly making all filings and applications, obtaining all licenses and paying all fees and charges.

4.4. Work Authorization Price, Invoices and Invoice Payment

(a) Price - Compensation for Services performed and expenses incurred shall be as set forth in each respective Work Authorization and the SOW, as applicable.

(b) Invoicing - For each Work Authorization, Provider will submit its invoice for all Services rendered pursuant to the payment schedule set forth in the Work Authorization or SOW, or if no payment schedule is specified, on a **[monthly]** basis (the "**Billing Period**"). Failure to submit invoices within ninety (90) days after the invoiced services were provided or expenses incurred shall be grounds to deny payment of such invoices. Such invoice shall be in a form approved by Company and shall at a minimum show (i) the total hours of Services performed for the applicable Billing Period by each Provider employee; (ii) the hourly rate for each Provider employee; (iii) a description of the Services performed; and (d) an itemized list of all allowable expenditures made during the Billing Period. Upon request by Company, Provider shall provide supporting documentation, including but not limited to invoices and receipts, as evidence of such expenditures. The invoice shall reference the applicable Company's Designated Representative, Company's purchase order number or Service Contract number, if any, Contract Number, Work Authorization Number and any additional information required as part of the Services hereunder. All invoices should be addressed:

Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, Hawaii 96840-0001

Attention: Accounts Payable
Service Order No. _____
Service Contract No. _____

NOTE: Do not include the name of the Company's Designated Representative in the address.

The ORIGINAL invoice, without attachments, must be sent directly to the Accounts Payable address listed above. ALL REQUIRED SUPPORTING DOCUMENTATION must be sent SEPARATELY to the Company's Designated Representative. Failure to follow this procedure may cause a delay in payment.

(c) Payments - Payment to Provider shall be made as follows:

(i) Electronic Payments - For Providers participating in Company's electronic payment program, Company will pay properly submitted invoices within fifteen (15) days after the invoice date; provided the invoice complies with Section 4.4(b)**(Invoicing).**

(ii) Manual Payments - For Providers not participating in Company's electronic payment program, Company will pay properly submitted invoices within thirty (30) days after the invoice date; provided the invoice complies with Section 4.4(b) (Invoicing).

The Company may require that Provider submit evidence reasonably satisfactory to the Company that all claims of all persons, firms or corporations that have provided Services included in any invoice have been paid or satisfactorily secured prior to making any partial payment.

(d) Withholding of Payments; Set-off - All payments, including the final payment, are subject to adjustment during or after termination of the Services on the basis of any final accounting which may be made by Company. Company may withhold from any payment, including the final payment: (i) any amount incorrectly invoiced; (ii) any amount in dispute either because Company has found the invoice excessive, or the Services performed unacceptable; or (iii) an amount sufficient to completely protect Company from any loss, damage or expense arising out of assertions by other parties of any claim or lien against Company because of Provider's performance of Services under a Work Authorization. Company further reserves the right to set-off any amounts due from Provider to Company against any amounts payable at any time by Company in connection with the Contract Documents.

(e) Payment Security – If required by Company, Provider shall post payment security as specified in the applicable Work Authorization or SOW. If the Company requires payment security (for example, via performance bond, parent guarantee or letter of credit, etc.), Provider shall submit such payment security to Company no later than seven (7) days after execution of the applicable Work Authorization or SOW.

4.5. Service Levels and Service Level Credits

(a) Service Levels. Provider shall perform the Services in accordance with the Service Level Agreement set forth in the applicable SOW or Work Authorization.

(b) Service Level Reporting. Provider shall measure and report its performance against the Service Levels set forth in the Service Level Agreement and meet with Company at least once every quarter during the Term, or more frequently if requested by Company, to review Provider's actual performance against the Service Levels and to discuss any remedial action necessary or appropriate to correct any deficiencies.

(c) Service Level Credits. If Provider fails to provide the Services in accordance with the Service Levels set forth in the Service Level Agreement included in the applicable SOW or Work Authorization, Provider shall apply the resulting Service Level Credits against the Charges owed to Provider for the month following the month in which the Service Level Credits were incurred. The precise methodology used in calculating the Service Level Credits shall be set forth in the applicable SOW or Work Authorization. The Service Level Credits represent credits for the reduced value of the Services, are not liquidated damages or penalties, shall not limit or diminish any of the remedies granted to Company hereunder, including the termination rights granted to Company in the Contract Documents, and Company shall be entitled to pursue all remedies that it may have against the Provider for the event or events giving rise to such Service Level Credits.

4.6. Acceptance

All Services and deliverables are subject to Company's acceptance. Such acceptance will occur when the applicable Services or deliverables meet the agreed upon tests or acceptance criteria specified in the applicable SOW. Acceptance procedures shall be set forth in the applicable SOW. If no requirements or acceptance criteria are set forth with respect to a particular deliverable or Services component, the acceptance criteria therefore shall be based on the Company's reasonable satisfaction therewith consistent with Provider's obligations under the Contract Documents.

4.7. Disputed Charges/Credits

In the event that Company disputes the accuracy or applicability of a Charge or credit or other financial arrangement described in the Contract Documents, Company shall notify Provider of such Dispute. The Parties will investigate and resolve the Dispute using the Dispute Resolution Procedures set forth in Article 15 (Dispute Resolution) hereof. Unpaid and uncredited monies that are the subject of a good faith Dispute may be withheld and will not be considered a basis for monetary default under, or a breach of, the Contract Documents.

5. COVENANTS

5.1. Covenant of Cooperation and Good Faith

The Parties covenant to timely and diligently cooperate in good faith to effect the purposes and objectives of this Master Agreement. Except as otherwise provided herein, neither Party shall unreasonably withhold or delay any consent, approval or request by the other Party required under the Contract Documents.

5.2. Services

Provider shall render Services using personnel that have the necessary knowledge, training, skills, experience, qualifications and resources to provide and perform the Services in accordance with the Contract Documents, and shall render Services in a prompt, professional, diligent, workmanlike manner consistent with industry standards applicable to the performance of such Services.

5.3. Timeliness of Performance

Provider acknowledges that prompt performance of all Services hereunder is a material obligation and is required by Company in order to meet its scheduled commitments. In the event that any anticipated or actual delays in meeting scheduled completion dates are caused by the unacceptable performance of Provider, Provider shall take the necessary steps, including the provision of additional personnel (if necessary), as reasonably requested by Company and at no additional charge to Company, in order to complete the assignment involved in a timely manner.

5.4. Export; Regulatory Approvals

With respect to any information disclosed pursuant to the Contract Documents:

(a) Each Party agrees to comply with all applicable U.S. export control and sanctions laws and regulations, including, but not limited to, the Arms Export Control Act, 22 U.S.C. 2751-2794, the International Traffic in Arms Regulations (ITAR), 22 C. F. R. 120 et seq.; the International Emergency Economic Powers Act (IEEPA), 50 U.S.C. 1701 et seq.; and the Export Administration Regulations, 15 C.F.R. 730-774, including the requirement for obtaining any export license or agreement, if applicable.

(b) When a Party discloses information that is controlled for export by U.S. law to the other Party, the disclosing Party will immediately notify the receiving Party and provide the applicable export control classification for the information.

(c) Each Party agrees that it will not export, re-export, or transfer (to include transfer to foreign persons employed by or associated with, or under contract to, that Party or the Party's suppliers) any information that it receives from the other Party, in whatever format, that is controlled for export without first obtaining the necessary U.S. Government authorization or relying on an applicable exception. This Section applies to the export, re-export, or transfer of information to foreign persons, wherever located.

(d) Each Party shall immediately notify the other Party if it is, or becomes, listed on any U.S. export control or sanctions list, (including, but not limited to the Denied Persons List, the Unverified List, the Entity List, the Specially Designated Nationals List, and the Debarred List), or if the Party's export privileges are otherwise denied, suspended or revoked in whole or in part by any U.S. Government entity or agency.

(e) Each U.S. Party that is engaged in the business of either exporting or manufacturing (whether exporting or not) Defense Articles or furnishing Defense Services, as those terms are defined in 22 C.F.R. 120.6 and 120.9, represents that it is registered with the Directorate of Defense Trade Controls at the Department of State as required by the ITAR.

(f) Each Party shall be responsible for its own losses, costs, claims, causes of action, damages, liabilities, and expenses including attorneys' fees, all expenses of litigation and/or settlement, arising from any action or admission of that Party, its suppliers or subcontractors in the performance of any of its obligations under this Section.

(g) Notwithstanding anything herein to the contrary, the obligations of each Party under this Master Agreement are contingent on the Party's obtaining the export authorizations required to fulfill its obligations

(h) Provider will timely obtain and maintain all necessary approvals, licenses and permits (required by law or otherwise) applicable to its business and the provision of the Services.

5.5. Malware

Provider will (consistent with the following sentence) ensure that no Malware or similar items are coded or introduced into the Services, the Company Systems interfacing with the Services, the Company Software, the Provider Information Systems and operating environments and processes used by Provider to provide the Services, including the information, data and other materials delivered by or on behalf of Provider to the Company, the customers of the Company and/or the Third Party Providers (collectively, the "**Environment**"). Provider will continue to review, analyze and implement improvements to and upgrades of its Malware prevention and correction programs and processes that are commercially reasonable and consistent with the then current technology industry's standards and, in any case, not less robust than the programs and processes implemented by Provider with respect to its own information systems. If Malware is found to have been introduced into the Environment, Provider will promptly notify Company and Provider shall eliminate the effects of the Malware at Provider's expense. Provider shall not modify or otherwise take corrective action with respect to the Company Systems except at Company's request. In all cases, Provider shall take immediate action to eliminate and remediate the Malware's proliferation and its effects on the Environment. Provider will promptly report to Company the nature and status of all Malware elimination and remediation efforts.

5.6. Disabling Code

If the Services include the development of software code, Provider covenants that Provider will ensure that there is no Disabling Code in any Provider Software. Provider further covenants that with respect to any Disabling Code that may be part of the Provider Software or Company Software, Provider will not invoke Disabling Code at any time, including upon expiration or termination of the Master Agreement and/or any Work Authorization, or any SOW for any reason.

5.7. Services Not to be Withheld

Provider will not willfully refuse to provide all or any portion of the Services set forth in the Master Agreement or any SOW. Provider acknowledges that its refusal to provide all or any of the Services or its abandonment of this Master Agreement and/or any Work Authorization(s) or any SOW in violation of the immediately preceding sentence would cause irreparable harm, the amount of which would be impossible to estimate, thus making any remedy at law or in damages inadequate. Provider therefore agrees that Company shall have the right to apply to any court of competent jurisdiction for and be granted an injunction

compelling specific performance by Provider of its obligations under the Master Agreement and/or any Work Authorization(s), and/or the applicable SOW without the necessity of notice, posting any bond or other security and Provider shall not request the posting of any such bond or other security. This right shall be in addition to any other remedy available under the Contract Documents, at law or in equity (including the right to recover damages).

5.8 Compliance with Law.

Provider shall comply with all Laws applicable to Provider and shall obtain all applicable permits and licenses required of Provider in connection with its obligations under this Master Agreement.

5.9 No Infringement.

Provider shall ensure that none of the Services, Provider Information System, Work Product or any enhancements or modifications to the Company Software performed by Provider or its subcontractors or any other resource or item provided by Provider to Company shall infringe upon the proprietary rights of any third party.

6. REPRESENTATIONS AND WARRANTIES

6.1. Representations and Warranties of Provider

Provider hereby makes the following representations and warranties to Company as of the Effective Date of this Master Agreement and as of the Execution Date of each Work Authorization:

(a) Good Standing. Provider is a **[_____]** validly existing and in good standing under the Laws of **[_____]**.

(b) Authority. Provider has all requisite power and authority to execute, deliver and perform its obligations under this Master Agreement.

(c) No Conflicts. the execution, delivery and performance of this Master Agreement by Provider (i) has been duly authorized by Provider and (ii) will not conflict with, result in a breach of, or constitute a default under, any other agreement to which Provider is a party or by which Provider is bound.

(d) Qualified to Do Business. Provider is duly licensed, authorized or qualified to do business and is in good standing in every jurisdiction in which a license, authorization or qualification is required for the ownership or leasing of its assets or the transaction of business of the character transacted by it, except where the failure to be so licensed, authorized or qualified would not have a material adverse effect on Provider's ability to fulfill its obligations under this Master Agreement.

(e) Compliance with Law. Provider is in compliance with all Laws applicable to Provider and has obtained all applicable permits and licenses required of Provider in connection with its obligations under this Master Agreement.

(f) Consents - Except as otherwise provided in this Master Agreement, no authorizations or other consents, approvals or notices of or to any Person are required in

connection with (i) the execution, delivery and performance by Provider of this Master Agreement, (ii) the development, implementation or operation of the Software and systems necessary for Provider to perform the Services in accordance with the applicable provisions of the Contract Documents and in compliance with all applicable Laws and Provider regulatory requirements, or (iii) the validity and enforceability of the Contract Documents.

(g) No Infringement - The Provider Information System and any Work Product, and Company's use thereof, and the Services, and Company's receipt thereof, shall not infringe any U.S. patent or copyright, misappropriate any Trade Secret or other proprietary right of any Third Party, or otherwise conflict with the rights of any Third Party.

(h) Performance Warranty - The Services will conform to the description of the Services set forth in the Contract Documents and to general industry standards for the Services and products offered by Provider pursuant to the Contract Documents. Provider further acknowledges that review and approval by Company of any deliverables or Work Product prepared by Provider in the performance of the Services shall not relieve Provider or any of its subcontractors or vendors of its professional responsibility for the Services.

(i) Data Processing and Transfers - With respect to each transfer of Personally Identifiable Information, Provider (i) has full legal authority in each jurisdiction where Personally Identifiable Information will be Processed to Process such Personally Identifiable Information; (ii) will Process such Personally Identifiable Information only on behalf of the Company and only as necessary to perform the Services; (iii) will use such Personally Identifiable Information for purposes not incompatible with those for which it was collected or subsequently authorized by the data subject; and (iv) has complied, and will comply, with all applicable Laws with respect to the transfer, Processing and any subsequent transfer of Personally Identifiable Information to a Third Party.

(j) Open Source - Provider has not and will not incorporate any Open Source Software (whether in source code or object code format) into the Work Product or Company Software used in connection with providing the Services (collectively, "**Affected Products**"), and none of the Affected Products or any portion thereof is or will be subject to or distributed under any license, other agreement or understanding, that (i) would require the distribution of source code with the Affected Products or require source code to be made available when such is distributed to any Third Party; (ii) would impact, restrict or impair in any way Company's ability to license the Affected Products (to the extent owned or licensable by Company) pursuant to terms of Company's choosing; or (iii) would impact or limit Company's ability to enforce Company's patent or other Intellectual Property Rights against any Third Party in any manner.

(k) Documentation Deliverables - Any deliverable consisting of documentation of any software or hardware deliverable will accurately reflect the operation of said software or hardware deliverable.

(l) No Litigation - There is no action, suit, proceeding or investigation pending or, to Provider's knowledge, threatened, that questions the validity of the Contract Documents or Provider's right to enter into this Master Agreement, the Work Authorization(s) and any SOW or to consummate any of the transactions contemplated by them.

(m) Materials - Provider warrants that, for Materials obtained by Provider for Company, such Materials shall be new and unused, and Company shall acquire good and clear title thereto, free and clear of all liens and encumbrances.

6.2 Remedial Measures - In the event of a breach of Section 6.1(h) (Performance Warranty), Provider shall (i) bring the affected Service and/or deliverables into material compliance with the specifications therefore set forth in the Work Authorization or SOW, as applicable, within a commercially reasonable period of time (which in no event shall exceed fifteen (15) days after notice of defect, unless otherwise agreed to by the Parties in writing); (ii) re-perform the Services within a commercially reasonable period of time (which in no event shall exceed fifteen (15) days after notice of defect, unless otherwise agreed to by the Parties in writing); or if (i) or (ii) cannot be accomplished (iii) return an appropriate portion of the fees paid by the Company with respect to the applicable portion of the Services or deliverables and of any applicable functionally related portion of the deliverables.

7. GOVERNANCE

Provider's personnel are expected to perform their work in a manner consistent with the degree of care and skill ordinarily exercised under similar circumstances of the same profession and to comply with Company's written technical standards and procedures, where agreed and incorporated into a SOW(s), and with the Company Rules. Provider will be required to provide all infrastructure and administrative support for its personnel during the Term, at its own expense, including without limitation, computer hardware, software and peripherals, office supplies, administrative assistants, travel planners, and the like.

8. RELATIONSHIP PROTOCOLS

8.1. Non-Exclusive; Alternate Providers

Unless otherwise expressly provided in any SOW, the relationship between the Parties is non-exclusive. During the Term, Company shall have the right to retain Third Party vendors to perform any service, function, responsibility, activity or task whether or not it is within the scope of the Services, or to perform any such services, functions, responsibilities or tasks (whether all or a part of the Services) internally. Provider shall cooperate with any such Third Party vendors and Company as requested from time to time.

8.2. Provider Personnel

(a) Company Requested Replacement of Provider Personnel - If Company determines in its discretion and for reasons that are not unlawful, that the continued assignment to the Company account of any Provider personnel is not in the best interests of Company, then the Company's Designated Representative may request by written notice that Provider replace any such individual with another qualified individual. After receipt of such notice, Provider will promptly remove such individual from the Company account and replace such individual with Provider personnel possessing qualifications and skills appropriate to the position. The Company shall have the right to approve all such replacement personnel and such approval shall not be unreasonably withheld.

(b) Background Investigations - To the extent not prohibited by applicable Law and in accordance with Company's policies, Provider will perform or arrange for a background investigation of all of Provider's personnel who will perform any of the Services, or any part thereof or related thereto, or will have access to any Company Confidential Information. In addition, Provider will ensure that all Provider subcontractors perform or arrange for a

background investigation, in the same manner, of all Provider subcontractors' personnel who will perform any of the Services, or any part thereof or related thereto, or who will have access to any of Company Confidential Information. Provider shall not assign any personnel to Company's account or otherwise permit any of its personnel to have access to Company Confidential Information who have been found to have engaged in certain criminal acts or tested positive for certain drugs specified by Company. Notwithstanding the foregoing, Company shall have the right independently to conduct background criminal conviction and security clearance checks on all Provider's personnel and contractors who will perform Services on Company premises, and Provider shall cooperate with Company's right to do the same (for example, by requiring Provider's, its Affiliates' and its subcontractors' personnel and contractors to sign consents for Company to perform such security clearance checks).

(c) Offshoring of Assignments - Unless otherwise agreed by Company, all personnel performing work in connection with the Services under the Contract Documents outside of the United States of America used by Provider in any Service shall be employees of Provider; and in all events, Provider shall retain the Company Confidential Information within the United States of America or another location approved and certified by the Company in writing.

(d) Independent Contractor - Provider shall be solely responsible for the payment of compensation (including provision for employment taxes, federal, state and local income taxes, workers compensation and any similar taxes) associated with the employment of Provider's employees. Neither Party shall be deemed a joint employer of the other's employees and each Party shall be responsible for any and all claims by its employees. Neither Party's employees shall be deemed "leased" employees of the other for any purpose. In connection with the Contract Documents, each Party is an independent contractor and does not have authority to bind or commit the other.

8.3. Use of Subcontractors

(a) No Subcontracting Without Consent - Provider shall not subcontract any portion of the Services without the prior written consent of Company, which may be withheld in its sole discretion, and otherwise in accordance with this section. The Parties will develop and prepare a list of approved subcontractors that the Parties agree may be engaged by Provider to perform and deliver the part or portion of the Services indicated on such list as a subcontractor to Provider, which will be set forth in the "Subcontractors" Exhibit attached to the applicable Work Authorization and/or SOW.

(b) Provider's Agreements with Subcontractors - Before any permitted subcontractor of Provider begins to perform any Service, Provider shall require each such subcontractor to agree to assign its rights in the Work Product and maintain the confidentiality of the Company Confidential Information and Provider shall submit to Company proof of such agreement upon Company's request. Provider shall also provide in its agreements with Provider subcontractors such written provisions as are sufficient to enable Provider to comply with the provisions of the Contract Documents.

(c) Responsibility of Provider - Provider shall remain primarily liable and obligated to Company for the timely and proper performance of all of its obligations hereunder, even if such obligations are delegated to a Company-approved subcontractor, and for the proper and timely performance and actions of any person or entity to which it delegates or subcontracts any such obligation.

(d) Replacement - In the event that Company determines that it is not in the best interests of Company for a subcontractor to continue performing any part or portion of the Services, Provider shall promptly remove such subcontractor from providing any Services under the Master Agreement upon request by Company.

8.4. Contract Management

(a) The "Third Party Agreements" Exhibit(s) attached to the applicable Work Authorization and/or the SOW shall set forth those Third Party Agreements that will govern Provider's use of the Company Software in connection with the provision of the Services described therein. To the extent provided to Provider, in accordance with the "Third Party Agreements" Exhibit, Provider shall comply with the terms and conditions of all such Third Party Agreements.

8.5. Inspections and Audits

(a) Provider Records - Provider shall maintain, at all times during the Term and at no additional charge to Company, complete and accurate records and supporting documentation pertaining to: (i) all Charges and financial matters under the Contract Documents; (ii) all other transactions, reports, filings, returns, analyses, Work Product, data and/or information created, generated, collected, processed or stored by Provider and/or Provider's subcontractors in the performance of the Services; and (iii) Provider's internal controls relating to the Services and relating to Company's control over the activities of Provider (collectively, "**Provider Records**"), all in a manner sufficient to permit the audits in accordance with this Section 8.5 (Inspection and Audits).

(b) Operational Audits - Provider shall provide to Company and to internal and external auditors, inspectors, regulators and other representatives that Company may designate from time to time ("**Company Auditors**") access in accordance with Section 8.5(d) (General Principles Regarding Audits) to perform operational audits and inspections of Provider, its subcontractors and their respective facilities ("**Operational Audits**"), to: (i) verify the integrity of the Company Data, (ii) examine the systems that process, store, support and transmit that data and examine the results of external Third Party data processing audits or reviews relating to Provider's operations relevant to the Services, (iii) verify whether the Services comply with the Company Rules; (iv) examine the controls (e.g., financial and accounting controls, organizational controls, input/output controls, system modification controls, processing controls, system design controls, and logical and physical access controls) and conduct walkthroughs (as defined by the Public Company Accounting Oversight Board ("**PCAOB**") and other testing and review procedures); (v) examine the security, disaster recovery and back-up practices and procedures, (vi) examine the development of Work Product; (vii) facilitate Company's compliance with Company Rules; (viii) evaluate Provider's performance and operations in light of applicable ISACA and RiskIT standards; and (ix) examine, test and assess Provider's systems, policies and procedures relating to intrusion detection and interception with respect to the Provider Information Systems used to provide the Services.

(c) Financial Audits - Provider shall provide to Company and Company Auditors access in accordance with Section 8.5(d) (General Principles Regarding Audits) to perform financial audits and inspections ("**Financial Audits**") to: (i) verify the accuracy and completeness of Provider Records, and (ii) verify the accuracy and completeness of Provider's invoices. If an audit reveals that errors have been made in connection with the Charges, then the Parties will work together to correct the error and any overpayments revealed by the audit

will be promptly paid by Provider or credited to Company. In addition, if the audit reveals any overpayment that is greater than five percent (5%) of the amount that was actually due for the period being audited, Provider shall bear the cost of the Audit, which cost shall not exceed reasonable and customary fees and in no instance shall such cost exceed $150,000.

(d) General Principles Regarding Audits.

Provider shall provide Company Auditors with reasonable access upon at least forty-eight (48) hours prior notice (unless circumstances reasonably preclude such notice) to: (i) the parts of any location at which Provider is providing the Services; (ii) Provider Information System used to provide the Services; (iii) Provider personnel providing the Services; (iv) Provider subcontractors and agents who perform any portion of the Services (including to such entity's personnel, facilities, records, systems, controls, processes and procedures); and (v) all Provider Records related to this project. Company Audits will be conducted in a manner that does not unreasonably disrupt or delay Provider's performance of services for its other customers. Company Auditors' access to the Provider Records shall include, but not be limited to, the right to inspect and photocopy same, the right to retain copies of such Provider Records outside of the locations and/or other Provider or Provider subcontractor premises, with appropriate safeguards, if such retention is deemed necessary by Company, and the right to install and operate audit software. Provider shall provide full cooperation to Company Auditors and Governmental Authorities.

(e) Copies of Audit Reports; Notice of Deficiency. Upon completion of any Operational Audit and/or Financial Audit (collectively, "**Company Audits**"), Company shall notify Provider of any deficiencies or material weaknesses found as a result of the Company Audit, and provide Provider with copies of portions of Company Audit reports reflecting or based upon information obtained from Provider.

(f) Action Plan - As part of the Services, in the event any audit reveals a deficiency or material weakness, Provider shall provide Company with a plan of action to correct the deficiency or material weakness, which plan of action shall be subject to Company's written approval and shall, at a minimum, include: (i) details of actions to be taken by Provider and/or its subcontractors to correct the deficiency or material weakness, and (ii) target dates for successful correction of the deficiency or material weakness ("**Action Plan**"). Provider shall provide the Action Plan within ten (10) Business Days of Provider's identification or Company's notice of such deficiency or material weakness. Provider shall also provide Company with notice of (A) Provider's successful completion of each action identified in the Action Plan; and (B) any delays in Provider's completion of the actions identified in the Action Plan, accompanied by an explanation of the cause of such delay.

(g) Cost of Audits - Company shall be responsible for all costs associated with Company Audits (other than Provider's reasonable cooperation and provision of access), except as provided for in Section 8.5(c) (Financial Audits).

(h) Document Retention - Provider shall retain all records, documents and data required to be maintained by it under the Contract Documents for such period as may be specified therein or as required by any Law applicable to the Company or pursuant to the document retention policies of the Company provided to Provider from time to time (but in any event, at least seven (7) years after performance of the Services). All such records, documents and data shall be maintained in such form (for example, in paper or electronic form) as may be

specified in any Contract Documents or, if not so specified, in the form in which they are generated and stored in the ordinary course, or as Company may direct.

(i) Right; Not Obligation – Company shall have the audit rights as specified in this Article 8, but it has no obligation to perform any or all of the same.

(j) Provider Compliance Manager - Provider will appoint, and maintain at all times during the Term, a liaison who will address issues arising in connection with the performance of Provider's obligations or, the exercise of Company's rights, pursuant to this Article (the "**Audit Compliance Liaison**").

9. TECHNOLOGY; INTELLECTUAL PROPERTY RIGHTS

9.1. Company Software

The initial list of Company Software that is necessary for the Provider to access and/or use to perform the Services shall be identified in a "Company Software" Exhibit attached to the applicable Work Authorization and/or the SOW. The "Company Software" Exhibit shall be updated as provided therein and shall set forth all Company Software to be accessed and/or used by Provider in support of or in connection with the Services covered by each SOW.

9.2. Provider Software

The initial list of Provider Software that is necessary for Provider to access and/or use to perform the Services shall be identified in the "Provider Software" Exhibit attached to the applicable Work Authorization and/or the SOW. Provider shall authorize access to and/or use of the Provider Software to the authorized representatives of Company Group during the Term in accordance with the provisions set forth in the "Provider Software" Exhibit.

9.3. Pre-Existing Materials

(a) Provider Pre-Existing Materials. All inventions or Materials made, developed or copyrighted by Provider (including the Provider Tools) (i) prior to the Effective Date, (ii) developed by Provider during the term of this Master Agreement that are outside the scope and any Work Authorization or SOW entered into under this Master Agreement ("**Provider Pre-existing Materials**") shall continue to be owned by Provider.

(b) Company Pre-Existing Materials. All inventions or Materials made, developed or copyrighted by Company (including the Company Tools) (i) prior to the Effective Date, (ii) developed by Company during the term of this Master Agreement that are outside the scope and any Work Authorization or SOW entered into under this Master Agreement ("**Company Pre-existing Materials**") shall continue to be owned by Company.

(c) License to Provider's Pre-Existing Materials. If the Work Product includes or requires the use of any Provider Pre-Existing Materials (excluding the Provider Tools), then Provider grants and agrees to grant to the Company (i) an unrestricted, royalty-free, perpetual license to use, display, copy, create Derivative Works of and perform the inventions, information or other aspects of the Pre-existing Materials, but only to the extent necessary to use, display, copy and create Derivative

Works of the Work Product, and (ii) the right to sublicense to Third Parties to do any of the foregoing, in all cases consistent with the rights granted under this Article 9 (Technology and Intellectual Property Rights). Notwithstanding the foregoing, the Company is not granted the right to sell such Work Product(s) to a Third Party. Notwithstanding the foregoing, with respect to any Materials that are developed solely by the Company and their respective contractors and that constitute a Derivative Work of any Pre-existing Materials developed by Provider, its Affiliates or its or their subcontractors, such Derivative Works (including all Intellectual Property Rights therein), as between Provider and the Company, shall be owned by the Company.

9.4. Provider Tools

Provider grants to Company and its Affiliates (including their respective Third Party service providers, but only to the extent such Third Party service providers are providing services for the benefit of the Company) an unrestricted, royalty-free, non-exclusive, worldwide, irrevocable, perpetual license to use and access, modify, maintain, enhance, create Derivative Works based upon (which shall be owned by Company), the Provider Tools (whether embedded or incorporated into Work Product, or to the extent existing as a standalone tool), in object and source code format, but only to the extent necessary to further develop, maintain and otherwise fully enjoy the rights granted to Company hereunder in any Work Product.

9.5. Ownership of Work Product

(a) Work Product. All results of the Services created or developed by Provider, by itself or jointly with the Company or others, including the Developed Software, Reports, deliverables, business methods or processes, programs, systems, processes, data development, modification and enhancement of systems, computer programs, operating instructions, specifications, technical information, ideas, inventions, drawings, works of authorship, designs, concepts and all other documentation, developed for the Company pursuant to a particular SOW and all such documents, data and other information of any kind, including information incorporating, based upon, or derived from the foregoing, and reports prepared by Provider or any Provider personnel (any of the foregoing whether or not completed), together with all modifications, revisions, changes, copies, translations, compilations, and Derivative Works of the foregoing (collectively, the "**Work Product**"), upon creation are, shall be and shall remain the property of Company and may not be used by Provider, its Affiliates or subcontractors or their personnel for any other purpose except for the benefit of the Company; provided, however that Work Product shall not be deemed to include Provider's Pre-existing Materials.

(b) Provider's Duty to Disclose Inventions. During the Term, Provider shall disclose promptly to Company any inventions or improvements made or conceived by Provider, its Affiliates or subcontractors or their personnel that result from work performed under the Contract Documents pursuant to the a particular SOW or any other Contract Documents or as a result of information supplied to Provider, its Affiliates or subcontractors or their personnel, directly or indirectly, by Company. Provider represents it does not have any commitments to others under which Provider is obligated to assign to such others inventions or improvements or rights therein in conflict with Provider's obligations to Company pursuant to the Contract Documents. The Contract Documents, including without limitation, and any SOW shall be construed to provide Company with the unencumbered right to own, use, modify, copy, and distribute the Work Product.

(c) Company's Ownership of Work Product. Company shall have all right, title and interest, including worldwide ownership of all Intellectual Property Rights in and to the Work Product and all copies made from it. To the extent any of the Work Product is not deemed a "work for hire" by operation of law, Provider hereby irrevocably assigns, transfers and conveys to Company, and shall cause the Provider personnel and the personnel of its Affiliates and any subcontractors to assign, transfer and convey to Company, without further consideration, all of their right, title and interest in and to such Work Product, including all Intellectual Property Rights in and to such Work Product. Provider acknowledges, and shall cause the Provider personnel and the personnel of its Affiliates and any subcontractors to acknowledge, that Company and its successors and permitted assigns shall have the right to obtain and hold in their own name any Intellectual Property Rights in and to such Work Product, unencumbered by any claim by Provider or any Provider personnel, and the personnel of its Affiliates and any subcontractors. Provider agrees to execute, and shall cause the Provider personnel and the personnel of its Affiliates and any subcontractors to execute, any documents or take any other actions as may reasonably be necessary, or as Company may reasonably request, to evidence, perfect, maintain and enforce Company's ownership of any such Work Product, whether during the Term or thereafter. The territorial extent of the rights in the Work Product assigned to Company by Provider and/or the Provider personnel under the Contract Documents shall extend to all the countries in the world. The assignment of the Intellectual Property Rights in the Work Product by Provider and/or the Provider personnel to Company shall be royalty-free, absolute, irrevocable and perpetual.

(d) Moral Rights. With respect to the "moral rights" of any author in any of the Work Product, and subject to the other provisions of this Section, Provider acknowledges that it is responsible for assuring that Company is entitled to (i) the undisturbed use of such items, and (ii) in particular and without limitation hereto, to exercise (on a co-ownership basis, as necessary) for the relevant author the right of dissemination, the right of recognition of authorship, the right to prevent distortions of the work, the right to decide whether the work should bear the author's designation, the right of access to copies of the work and the revocation rights for such items.

9.6. License to Embedded Provider Software

If Provider incorporates or embeds any Provider Software into any Company Software or Work Product ("**Embedded Provider Software**"), Provider hereby grants, and agrees to grant, to the Company (a) a worldwide, nonexclusive, royalty-free, perpetual, irrevocable license to use and create Derivative Works of such Embedded Provider Software (i) to the extent necessary to develop, maintain and otherwise fully enjoy the rights granted to Company hereunder in such Work Product for the normal business purposes of the Company and (ii) solely as used in such Work Product and not as a "stand-alone" product or separately from such Work Product in which it is embedded, and (b) the right to sublicense Third Parties to do any of the foregoing. Notwithstanding the foregoing, the Company is not granted the right to sell such Work Product(s) to a Third Party. Provider shall cause its personnel and the personnel of its Affiliates and any subcontractors (and their respective employees, agents and subcontractors), as applicable, to grant such licenses.

9.7. No Implied Licenses

(a) No Implied Licenses. Neither the Contract Documents nor any disclosure made thereunder grants any license to either Party under any Intellectual Property of the other Party, except for the licenses expressly granted under the Contract Documents.

9.8. Limitation on Grants of Rights

Any ownership or license rights herein granted to either Party in the Contract Documents may be limited by and subject to any Intellectual Property owned by, and terms and conditions of any license agreements with, applicable Third Party Providers (excluding Provider and its Affiliates and its or their permitted subcontractors); provided, however, to the extent any of the Work Product (including all Intellectual Property embodied therein) are not owned by or licensed to the Party with an obligation to grant a license or transfer ownership of such Materials to the other Party (as described in this Article 9 (Technology; Intellectual Property Rights), the Party with the obligation to grant such license or transfer such ownership shall take such action as shall be necessary or required to fulfill such obligations and promptly and timely grant such license or transfer such ownership.

9.9. Assignment

To the extent ownership of any of the Work Product (including all Intellectual Property Rights therein) is not, by operation of law, vested in the Party to which ownership has been granted (as described in this Article 9 (Technology; Intellectual Property Rights), each Party agrees to, and to cause its Affiliates to (and with respect to Provider, Provider's subcontractors to) assign and hereby assigns, without further consideration, the ownership of all right, title and interest in such Materials (including all other Intellectual Property rights embodied therein) to the other Party and shall execute such other documents, including patent assignments, and shall provide such additional information, all as may be reasonably necessary to permit the assignee Party to obtain and perfect in its own name all Intellectual Property Rights therein and thereto.

9.10. Third Party Software

(a) After the Effective Date of this Master Agreement and, with respect to any SOW incorporated into any Work Authorization entered into hereunder, the Execution Date of each SOW, Provider will not, without the prior written consent of Company, incorporate any Third Party Software into any Work Product. In the event that Provider intends to incorporate any Third Party Software into the Work Product in breach of this provision Provider will (i) obtain Company's written consent prior to incorporating such Third Party Software into any Work Product or deliverable; (ii) identify any additional costs or savings associated with incorporating such Third Party Software into the Work Product or deliverable, including any costs related to obtaining appropriate license rights to such Third Party Software; and (iii) identify any limitations on the license. In the event that Provider incorporates Third Party Software into any Work Product without obtaining Company's consent as required by this Section 9.10(a), then Provider shall obtain the right to grant to Company an irrevocable, perpetual, fully paid-up, global license to access, display, use and maintain such Third Party Software (in object and source code format) for the benefit of the Company upon any expiration or termination of the Master Agreement. In the event that Provider incorporates such Third Party Software into any Work Product without obtaining Company's consent as required by this Section 9.10(a) and Provider is unable to obtain the rights described in the immediately preceding sentence, Company may

agree to permit Provider to provide a workaround acceptable to Company (in Company's sole discretion).

(b) Provider shall, and shall cause its Affiliates and subcontractors to, comply with all license, usage and other obligations under all licenses and maintenance agreements for the Company Third Party Software, including without limitation, the obligations of nondisclosure and scope of use.

10. CONFIDENTIALITY AND DATA

10.1. Confidentiality and Non-Disclosure

(a) For the purposes of this Master Agreement, "**Confidential Information**" means all information and documentation of Company and Provider, respectively, whether disclosed to or accessed by Company or Provider in connection with this Master Agreement, including (i) with respect to Company, all Company Data, all information of Company or its customers, suppliers, contractors and other third parties doing business with Company, and all records and reports related to the Company Group, the business of the Company Group and the Services whether in existence at the Effective Date or compiled thereafter in the course of performing the Services, and (ii) any information developed by reference to or use of Company's or Provider's information. The Party disclosing such information shall be referred to in this section as the "**Disclosing Party**," and the Party receiving such information shall be referred to as the "**Receiving Party**."

(b) The Receiving Party will hold in confidence and, without the consent of the Disclosing Party, will not use, reproduce, distribute, transmit, or disclose, directly or indirectly, the Confidential Information of the Disclosing Party except as permitted herein. The Receiving Party may only disclose the Confidential Information to its officers, directors, employees, professional advisors and its Affiliates and any subcontractors with a direct need to know the information for the implementation or exercise of rights and/or performance of obligations under or arising from the Contract Documents, provided that such persons/entities are bound by written confidentiality agreements with terms and conditions that are no less restrictive than those contained in this Article 10 (Confidentiality and Data). Without limiting the foregoing, the Receiving Party agrees that it will exercise at least the same standard of care in protecting the confidentiality of the Disclosing Party's Confidential Information as it does with its own Confidential Information of a similar nature, but in any event, no less than reasonable care.

(c) Confidential Information for purposes of the Contract Documents shall not include information if and only to the extent that the Receiving Party establishes that the information: (i) is or becomes a part of the public domain through no act or omission of the Receiving Party; (ii) was in the Receiving Party's lawful possession prior to the disclosure and had not been obtained by the Receiving Party either directly or indirectly from the Disclosing Party; (iii) is lawfully disclosed to the Receiving Party by a third party without restriction on disclosure; or (iv) is independently developed by or for it without the use of the other Party's Confidential Information. Confidential Information may also be disclosed by the Receiving Party pursuant to a requirement of a governmental agency, regulatory body or by operation of law, provided that the Receiving Party shall disclose only that part of the Confidential Information that it is required to disclose and shall notify the Disclosing Party prior to such disclosure in a timely fashion in order to permit the Disclosing Party to lawfully attempt to prevent or restrict such disclosure should it so elect, and shall take all other reasonable and lawful measures to

ensure the continued confidential treatment of the same by the party to which the Confidential Information is disclosed.

(d) Any provision herein to the contrary notwithstanding, Company may disclose Confidential Information, as necessary and appropriate, to the State of Hawaii Public Utilities Commission ("**Commission**") and/or State of Hawaii Consumer Advocate ("**CA**") (including their respective staffs) provided that such disclosure is made under a protective order entered in the docket or proceeding with respect to which the disclosure will be made or any general protective order entered by the Commission.

10.2. Ownership of Company Confidential Information

(a) Ownership of Confidential Information. All Provider Confidential Information is, or will be, and shall remain the property of Provider. All Company Confidential Information is, or will be, and shall remain the property of Company. Without Company's approval (in its sole discretion), the Company Confidential Information shall not (i) be used by Provider or Provider subcontractors other than in connection with providing the Services, (ii) be disclosed, sold, assigned, leased or otherwise provided to third parties by Provider or Provider subcontractors or (iii) be commercially exploited by or on behalf of Provider or Provider subcontractors. Provider hereby irrevocably assigns, transfers and conveys, and shall cause Provider subcontractors to assign, transfer and convey, to Company without further consideration all of its and their right, title and interest in and to the Company Confidential Information. Upon request by Company, Provider shall execute and deliver, and shall cause Provider subcontractors to execute and deliver, any financing statements or other documents that may be necessary or desirable under any Law to preserve, or enable Company to enforce, its rights.

(b) Return of Company Confidential Information. Upon request by Company at any time and from time to time and without regard to the default status of the Parties under the Contract Documents, Provider and/or its subcontractors shall promptly deliver to Company the Company Confidential Information (including without limitation all Company Data) in its possession in such format as may be reasonably requested by Company and in such hard copy as exists on the date of the request by Company. Provider shall also erase or destroy all or any part of Company Confidential Information in Provider's possession, in each case, to the extent requested by Company.

10.3. Loss of or Unauthorized Access to Company Confidential Information; Intrusions

(a) Safeguards - In addition to any other requirements in the Contract Documents, Provider shall establish an information security program with respect to Company Confidential Information, including Personally Identifiable Information, which: (i) ensures the security and confidentiality of such Company Confidential Information, including Personally Identifiable Information; (ii) protects against any anticipated threats or hazards to the security or integrity of such Company Confidential Information, including Personally Identifiable Information, and (iii) protects against any unauthorized use of or access to such Company Confidential, including Personally Identifiable Information. Provider shall also establish and maintain network and internet security procedures, protocols, security gateways and firewalls with respect to such Company Confidential Information, including Personally Identifiable Information. All of the

foregoing shall be consistent with the Company Rules and no less rigorous than those safeguards and procedures maintained by Company prior to the Commencement Date of the applicable Services (or, if a SOW, the Execution Date) and shall be no less rigorous than those maintained by Provider for its own data and information of a similar nature, but in no event less than reasonable care.

(b) Security Assessment - Without limiting the generality of the foregoing, Provider's information security policies shall provide for (i) regular assessment and re-assessment of the risks to the security of Company Confidential Information and systems acquired or maintained by Provider and its agents and contractors, including (A) identification of internal and external threats that could result in a Security Breach, (B) assessment of the likelihood and potential damage of such threats, taking into account the sensitivity of such data and systems, and (C) assessment of the sufficiency of policies, procedures, and information systems of Provider and its Affiliates and subcontractors, and other arrangements in place, to control risks; and (ii) protection against such risks.

(c) Media - Provider shall remove all Company Confidential Information from any media taken out of service and shall destroy or securely erase such media in accordance with the Company Security Requirements and otherwise in a manner designed to protect against unauthorized access to or use of any Company Confidential Information in connection with such destruction or erasure.

(d) Security Breach - In the event Provider becomes aware of any Security Breach due to Provider acts or omissions other than in accordance with the terms of the Contract Documents, Provider shall, at its own expense, (i) immediately notify Company's Project Manager and Chief Information Officer of such Security Breach in accordance with the Notice provision of this Master Agreement and perform a root cause analysis thereon; (ii) investigate such Security Breach and report its findings to Company; (iii) provide Company with a remediation plan, acceptable to Company, to address the Security Breach and prevent any further incidents; (iv) remediate such Security Breach in accordance with such approved plan; (v) conduct a forensic investigation to determine what systems, data and information have been affected by such event; and (vi) cooperate with Company and, at Company's request, any law enforcement or regulatory officials, credit reporting companies, and credit card associations investigating such Security Breach. Without limiting the foregoing and notwithstanding anything herein to the contrary, Company shall make the final decision on notifying Company's customers, employees, service providers and/or the general public of such Security Breach, and the implementation of the remediation plan. If a notification to a customer is required under any Law or pursuant to any of Company's privacy or security policies, then notifications to all customers who are affected by the same event (as reasonably determined by Company) shall be considered legally required. Provider shall reimburse Company on demand for all reasonable Notification Related Costs incurred by Company arising out of or in connection with any such Security Breach resulting in a requirement for legally required notifications (as determined in accordance with the previous sentence). In the event that Provider becomes aware of any Security Breach which is not due to Provider acts or omissions other than in accordance with the terms of the Contract Documents, Provider shall immediately notify Company of such Security Breach, and the Parties shall reasonably cooperate regarding which of the foregoing or other activities may be appropriate under the circumstances, including any applicable Charges for the same. Provider shall notify Company within five (5) Business Days of the commencement of any investigation of its use of Personally Identifiable Information or security practices by any Governmental Authority or self-regulatory organization, any material change in such investigation and the results of such investigation.

(e) Intrusion Detection/Interception - Provider will provide Company and its representatives with access to Provider's Information Systems, policies and procedures relating to intrusion detection and interception with respect to the Provider Information Systems used to provide the Services for the purpose of examining, testing and assessing those Provider Information Systems, policies and procedures in accordance with Section 8.5 (Inspections and Audits) of this Master Agreement.

10.4. Limitation

The covenants of confidentiality and other restrictive covenants set forth herein (a) will apply after the Effective Date to any Confidential Information disclosed to the Receiving Party before and after the Effective Date and (b) will continue and must be maintained in perpetuity.

10.5. Injunctive Relief

Provider acknowledges that its violation of Article 10 (Confidentiality and Data) would cause irreparable harm, the amount of which would be impossible to estimate, thus making any remedy at law or in damages inadequate. Provider therefore agrees that Company shall have the right to apply to any court of competent jurisdiction for and be granted an injunction compelling specific performance by Provider of its obligations under the Contract Documents, including without limitation, and/or the applicable SOW without the necessity of notice posting any bond or other security, and Provider agrees not to request such bond or other security. This right will be in addition to any other remedy available under the Contract Documents, at law or in equity (including the right to recover damages).

11. TERMINATION

11.1. Termination by Company

Company may terminate the Master Agreement, any SOW or Work Authorization, in whole or in part, for any of the following reasons:

(a) Material Breach - Upon written notice, if a material breach of the Contract Documents by Provider remains uncured for ten (10) days after receipt of written notice thereof by Company to Provider, or the occurrence of a Service Level Termination Event as defined in the applicable "Service Level Agreement" included in the applicable SOW; or

(b) Persistent Breach - Upon written notice, if there exists a series of material breaches that are cured within the permissible periods, or non-material persistent breaches, of the Contract Documents by Provider that in the aggregate constitute a material breach or have a material adverse impact on the Services or (i) on the administrative, management, planning, financial reporting or operations functions of the Company or the portion of the Company constituting the user of the applicable Services; (ii) on the functions of the Company comprising the applicable Services; or (iii) the financial performance of the portion of the Company constituting the user of the applicable Services; or

(c) Convenience - For convenience with respect to any part of the Services upon one hundred twenty (120) days prior written notice of the effective date of such termination, by Company to Provider; or

(d) Insolvency - Upon written notice to Provider if Provider or any subcontractor of Provider performing a material portion of the Services becomes insolvent or is unable to pay its debts or enters into or files (or has filed or commenced against it) a petition, arrangement, application, action or other proceeding seeking relief or protection under the bankruptcy laws of the United States or any similar laws of the United States or any state of the United States or transfers all or substantially all of its assets to another person or entity; or

(e) Change of Control of Provider - In the event of a Change of Control of Provider, upon one hundred twenty (120) days prior written notice to Provider given not later than one hundred eighty (180) days after Provider's written notice to Company of the occurrence of such Change of Control; or

(f) Force Majeure Failure - If any Force Majeure Event lasts longer than five (5) consecutive days, or if Force Majeure events in the aggregate last more than thirty (30) days in any twelve (12) month period, and Company determines in good faith that such Force Majeure Event substantially prevents, hinders or delays Provider's performance of any of the Services, then Company may upon written notice terminate this Master Agreement as a whole, or all or any portion of the affected SOW; or

(g) Service Level Termination Event - Under the circumstances set forth in the applicable "Service Level Agreement" Exhibit.

11.2. Termination by Provider

Provider may terminate the affected Services described in a Work Authorization, including in any SOW, in whole or in part, for any of the following reasons:

(a) Non-payment - Provider may terminate the affected Services described in the applicable SOW for cause if Company does not pay material undisputed amounts under such SOW when due; provided, however that (i) such termination shall be effective no earlier than thirty (30) days after Company's receipt of Provider's written notice of its intent to terminate the applicable SOW for nonpayment and (ii) Company has the right to cure any nonpayment within such thirty-day period in which case Provider shall not have the right to proceed with the termination.

(b) Material Breach – Upon written notice, if a material breach of the Contract Documents by Company (other than non-payment) remains uncured for thirty (30) days after receipt of written notice thereof by Provider to Company; provided, however, if a cure cannot be completed within such thirty-day period and the Company is working in good faith to cure such breach, the Provider will give the Company an opportunity to develop and implement a corrective action plan within a timeframe to be designated by the parties in writing.

11.3. Effect of Termination

(a) Company shall not be obligated to pay any Charges that would otherwise accrue and be payable by Company pursuant to the Contract Documents after the effective date of the expiration or termination of the Master Agreement or any such SOW. In the event of any SOW termination, the Charges for the portion of the Services so terminated shall be removed from the applicable "Price" Exhibit and any other terms shall be equitably adjusted to reflect the termination of such portion of the Services.

(b) Company's right to terminate this Master Agreement or any SOW for convenience in accordance with Section 11.1(c) shall be without any obligation or liability to Provider other than the payment to Provider of (1) all fees due and payable through the termination date and (2) wind-down expenses, which mean the net amount, after Provider takes commercially reasonable action to mitigate the adverse financial impact on Provider, that will reimburse Provider for the actual reasonable cost that Provider incurs in the disposition and/or reallocation of Provider materials and the portion of any facilities in Hawaii dedicated to the performance of the Services, the placement of Provider personnel allocated to the delivery of the Services, and the termination, if appropriate, of the Third Party Agreements, in the event of a termination occurring prior to the expiration of the Term; provided, however that the Company shall have the right to mitigate such costs by purchase of, or assumption of the leases for any such facilities, hiring the Provider personnel dedicated to the performance of the Services, and assuming Third Party Agreements used by Provider to perform and deliver the Services and taking similar actions.

11.4. Survival of Selected Provisions

(a) Survival - Notwithstanding the expiration or earlier termination of the Services, the Master Agreement or any SOW for any reason however described, the following Sections of the Master Agreement shall survive any such expiration or termination: Section 2.1 (Term of Agreement), Section 9 (Technology; Intellectual Property), Section 10 (Confidentiality and Data), Section 11.3 (Effect of Termination), Section 11.4 (Survival Of Selected Provisions), Section 12 (Liability), Section 13 (Indemnities), Section 14 (Insurance; Title and Risk of Loss) Section 15 (Dispute Resolution), and Section 17 (General). Upon termination or expiration of the Master Agreement, all rights and obligations of the Parties under the Master Agreement shall expire, except those rights and obligations under those Sections specifically designated to survive in this Section 11.4(a).

12. LIABILITY

12.1. Limits on Liability

(a) Liability Cap. Except as provided in Section 12.1(b) (Exceptions to Liability Cap), and notwithstanding any other provision of the Contract Documents, the liability of each Party and its employees to the other for any and all claims, damages, injuries, costs, expenses and other Losses ("collectively, "**Subject Damages**") arising out of or relating to any and/or all Work Authorizations executed hereunder (including, but not limited to, breach, performance or non-performance by the Party and its subcontractors under the Contract Documents), from any and all cause or causes, –regardless of how the causes(s) of action is or are characterized (for example, but not limited to, in negligence, errors and omissions, tort, strict liability, breach of contract, breach of warranty, or guarantee), shall, to the fullest extent permitted by law, be limited to the following dollar amounts:

(i) For any and all Subject Damages arising out of or relating to any and/or all Work Authorizations executed under this Master Agreement, the dollar limit per claim shall be as follows ("Contract Price" as follows shall mean the total not to exceed price (i.e., dollar amount) set forth under the applicable Work Authorization):

CONTRACT PRICE (CP)	DOLLAR LIABILITY LIMIT PER CLAIM
LESS THAN $50,000	3 X CP

$50,001 - $250,000	2 X CP OR $150,000 (whichever is greater)
$250,001 AND GREATER	1 X CP OR $500,000 (whichever is greater)

(b) Exceptions to Liability Cap. Notwithstanding any provision of the Contract Documents to the contrary, the limitations of liability set forth in Section 12.1(a) (Liability Cap) shall not apply to or limit: (i) a Party's indemnity obligations to the other Party under Article 13 (Indemnities) of this Master Agreement; (ii) damages or liabilities arising from the gross negligence, fraud or willful misconduct of the Party; (iii) damages or liabilities arising from personal injury (including death) or damage to real property or tangible personal property caused by the Party, or (iv) damages or liabilities arising from any breach of confidentiality obligations under this Master Agreement, and (v) recovery of any attorneys' fees and costs awarded pursuant to Law to a prevailing party in an action or proceeding enforcing or based on this Master Agreement.

(c) Exclusion of Certain Damages. Notwithstanding any provision of the Contract Documents to the contrary, to the fullest extent permitted by law, in no event shall a Party or its employees be liable to the other under this Master Agreement and/or any Work Authorization executed hereunder for any damages that are punitive or exemplary or any special, indirect, incidental or consequential damages even if advised of the possibility of such damages.

13. INDEMNITIES

13.1. Indemnity by Provider

To the full extent allowed by applicable law, Provider will indemnify and hold harmless Company, its Affiliates, and the respective current, future and former officers, directors, employees, agents, successors and assigns of each of the foregoing, and each of the foregoing persons or entities (the "**Company Indemnitees**") on demand, from and against any and all Losses incurred by any of them as a result of the following Third Party Claims, and shall defend the Company Indemnitees against the following Claims:

(a) all Claims that any Provider Information System, Work Product, Services or any other item, information, system, deliverable, software or service provided or used under the Contract Documents by Provider (or any Provider Affiliate, agent, contractor, subcontractor or representative), or Company's use thereof (or access or other rights thereto) in connection with the Services or any Third Party's use thereof authorized by Provider in any circumstance, infringes or misappropriates a United States patent, trademark or copyright of a Third Party provided however, Provider shall have no liability or obligation to any of the Company Indemnitees under this Section 13.1(a)(i) to the extent the claim of infringement or misappropriation is caused by; (A) such Company Indemnitee's unauthorized use or modification of such item; or (B) such Company Indemnitee's use of such item in combination with any product or equipment not owned, developed, contemplated or authorized by Provider or (ii) with respect to any item provided by Company. If any deliverable or item provided by Provider hereunder is held to constitute, or in Provider's reasonable judgment is likely to constitute, an infringement or misappropriation, Provider will in addition to its indemnity obligations, at its expense and option, and after consultation with Company regarding Company's preference in such event, either: (w) procure the right for Company Indemnitees to continue using such Service, deliverable or item; (x) replace such Service deliverable or item with a non-infringing equivalent, provided that such replacement does not result in a degradation of the functionality, performance or quality of the Service, deliverable or item; (y)

modify such deliverable item, or have such deliverable or item modified, to make it non-infringing, provided that such modification does not result in a degradation of the functionality, performance or quality of the deliverable or item; or (z) create a feasible workaround that would not have any adverse impact on the Company. THIS IS THE EXCLUSIVE REMEDY AVAILABLE TO THE COMPANY AS WELL AS PROVIDER'S ENTIRE OBLIGATION AND LIABILITY IN CASE OF AN INFRINGEMENT OR MISAPPROPRIATION CLAIM.

(b) all Claims by subcontractors of Provider or any of its Affiliates, or by employees of Provider or any of its Affiliates arising out of or relating to the Contract Documents or the Services to the extent such Claims and related Losses are caused by the acts or omissions of Provider, and except to the extent of any Losses caused by the negligence or willful misconduct of the Company or any of its Affiliates, employees or subcontractors (other than Provider and its Affiliates and subcontractors);

(c) all Claims to the extent arising out of or resulting from any act or omission of Provider in its capacity as an employer or purported employer of a Person and arising out of or relating to (i) Laws for the protection of Persons who are members of a protected class or category of Persons, (ii) sexual discrimination or harassment, and (iii) any other aspect of the employment relationship or its termination (including claims for breach of an express or implied contract of employment) which arose when the Person asserting the claim, demand, charge, actions, cause of action or other proceeding was or purported to be an employee of, or candidate for employment by, the Provider;

(d) all Claims related to personal or real property damage to the extent resulting from or arising out of the acts of Provider's employees, subcontractors or Affiliates, while present on Company facilities, whether occurring within or outside of the scope of such employee's, subcontractor's and/or Affiliate's responsibilities in connection with their provision of the Services.

(e) all Claims for personal injuries, death or damage to tangible or intangible personal or real property, including claims of any employee of Company or any Company Affiliate (or their respective subcontractors), to the extent such Claims and related Losses are caused by acts or omissions of Provider or any of its Affiliates or subcontractors related to the Contract Documents or Services;

(f) all Claims to the extent arising from Provider's or any of its subcontractors or Affiliates' violation of any Law applicable to Provider or the provision of the Services, excluding any such violations caused by a breach of the Contract Documents by Company, together with all liability, fines damages, costs or expenses incurred by Company arising from failure to comply with Section 3.2(a) by Provider or any of its subcontractors (even though such liability, fines, damages, costs and expenses are not Claims);

(g) all Claims to the extent arising from the fraud, theft or the willful misconduct of, Provider or its Affiliates or subcontractors or the employees of any of the foregoing;

(h) all Claims for Provider's Tax liabilities arising from Provider's provision of Services, as set forth in Section 4.2 (Taxes);

(i) all Claims arising from Provider's failure to remit promptly Taxes paid by the Company to Provider to the applicable taxing authority as described in Section 4.2(a)(Responsibility);

(j) all Claims that any personnel supplied by Provider, its Affiliates and/or their subcontractors under the Contract Documents is an employee or agent of Company, to the extent such Claims arise from the acts or omissions of Provider, including, but not limited to; (i) the cost of any additional compensation or employee benefits Company is required to provide to or pay for on behalf of any personnel supplied by Provider, its Affiliates and/or their subcontractors; and (ii) any Claim brought by any personnel supplied by Provider, its Affiliates and/or subcontractors against Company based upon the employer-employee relationship, to the extent such Claims arise from the acts or omissions of Provider, and except for any such Claims and related Losses that arise out of or result from any acts or omissions of the Company;

(k) all Claims arising out of any Security Breach by Provider or any of its Affiliates or subcontractors (including all Notification Related Costs) to the extent such Claims and resulting Losses are caused by Provider's or its Affiliates or subcontractors' acts or omissions other than in accordance with the terms of the Contract Documents; and

(l) all Claims arising out of Provider's failure to comply with the terms of Section 8.4 (Contract Management) or Provider's use in performing and/or providing the Services to the Company of products, services or license rights under the Third Party Agreements, to the extent due to Provider's breach of the Third Party Agreement for such products, services or license rights.

13.2. Indemnity by Company

To the full extent allowed by applicable law, Company will indemnify and hold harmless Provider and its Affiliates, and the respective current, future and former officers, directors, employees, agents, successors and assigns of each of the foregoing, and each of the foregoing persons or entities (the "**Provider Indemnitees**") on demand, from and against any and all Losses incurred by any of them and shall defend the Provider Indemnitees against all Third Party Claims arising from or in connection with:

(a) all Claims that any Company Software, or Provider's or its subcontractor's access and/or use thereof in accordance with the terms of the Contract Documents, infringes or misappropriates A United States patent, trademark or copyright of a Third Party; provided, however, Company shall have no liability or obligation to any of the Provider Indemnitees under this Section 13.2(a) (i) to the extent that the claim of infringement or misappropriation is caused solely by: (A) such Provider Indemnitee's or its subcontractors' unauthorized modification of such item; or (B) such Provider Indemnitee's or its subcontractors' use of such item in combination with any product or equipment not owned, developed, contemplated or authorized by Company, or (ii) with respect to any Company Software incorporated in any Work Product. If any Company Software provided by Company hereunder is held to constitute, or in Company's reasonable judgment is likely to constitute, an infringement or misappropriation, Company will in addition to its indemnity obligations, at its expense and option, and after consultation with Provider regarding Provider's preference in such event, either: (w) procure the right for Provider Indemnitees to continue using such Company Software; (x) replace such Company Software with a non-infringing equivalent, provided that such replacement does not result in a

degradation of the functionality, performance or quality of the deliverable or item; (y) modify such Company Software, or have such Company Software modified, to make it non-infringing, provided that such modification does not result in a degradation of the functionality, performance or quality of the Company Software; or (z) create a feasible workaround that would not have any adverse impact on Provider THIS IS THE EXCLUSIVE REMEDY AVAILABLE TO PROVIDER AS WELL AS COMPANY'S ENTIRE OBLIGATION AND LIABILITY IN CASE OF AN INFRINGEMENT OR MISAPPROPRIATION CLAIM;

(b) all Claims by subcontractors of Company or any of its Affiliates, or by employees of Company or any of its Affiliates arising out of or relating to the Contract Documents or the Services to the extent such Claims and related Losses are caused by the acts or omissions of Company, and except to the extent of any Losses caused by the negligence or willful misconduct of Provider or any of its Affiliates, employees or subcontractors (other than Company and its Affiliates and subcontractors);

(c) all Claims to the extent arising out of or resulting from any act or omission of Company in its capacity as an employer or purported employer of a Person and arising out of or relating to (i) Laws for the protection of Persons who are members of a protected class or category of Persons, (ii) sexual discrimination or harassment, and (iii) any other aspect of the employment relationship or its termination (including claims for breach of an express or implied contract of employment) which arose when the Person asserting the claim, demand, charge, actions, cause of action or other proceeding was or purported to be an employee of, or candidate for employment by, Company;

(d) all Claims related to personal or real property damage to the extent resulting from or arising out of the acts of Company's employees, subcontractors or Affiliates, while present on Company facilities, whether occurring within or outside of the scope of such employee's, subcontractor's and/or Affiliate's responsibilities in connection with their provision of the Services;

(e) all Claims for personal injuries, death or damage to tangible or intangible personal or real property, including claims of any employee of Provider or any Provider Affiliate (or their respective subcontractors), to the extent such Claims and related Losses are caused by acts or omissions of Company or any of its Affiliates or subcontractors related to the Contract Documents or Services;

(f) all Claims to the extent arising from Company's or any of its subcontractors or Affiliates' violation of any Law applicable to Company or the provision of the Services, excluding any such violations caused by a breach of the Contract Documents by Provider, together with all liability, fines damages, costs or expenses incurred by Provider arising from any and all such violations of Law (even though such liability, fines, damages, costs and expenses are not Claims);

(g) all Claims to the extent arising from the fraud, theft or the willful misconduct of, Company or its Affiliates or subcontractors or the employees of any of the foregoing;

(h) all Claims for Company's Tax liabilities arising in connection with the Services as set forth in Section 4.2(Taxes);

(i) all Claims arising from Company's failure to remit promptly Taxes paid by Provider to Company to the applicable taxing authority as described in Section 4.2(a)(Responsibility); and

(j) all Claims that any personnel supplied by Company, its Affiliates and/or their subcontractors under the Contract Documents is an employee or agent of Provider, to the extent such Claims arise from the acts or omissions of Company, including, but not limited to; (i) the cost of any additional compensation or employee benefits Provider is required to provide to or pay for on behalf of any personnel supplied by Company, its Affiliates and/or their subcontractors; and (ii) any Claim brought by any personnel supplied by Company, its Affiliates and/or subcontractors against Provider based upon the employer-employee relationship, to the extent such Claims arise from the acts or omissions of Company, and except for any such Claims and related Losses that arise out of or result from any acts or omissions of Provider.

13.3. Indemnification Procedures

(a) To receive the indemnities contained in this Article 13 (Indemnities), an indemnified Party hereunder shall promptly notify, in writing, the indemnifying Party of any Claim with respect to which it seeks indemnity under this Article 13 (Indemnities) and provide reasonable cooperation (at the indemnifying Party's expense) and full authority to defend or settle the Claim or suite in accordance with this Section 13.3 (Indemnification Procedures). An indemnifying Party may participate, at its own expense, in the defense of such Claim. If it so elects within a reasonable time after receipt of such notice, an indemnifying Party may, except as provided in the immediately following sentence and the last sentence of this paragraph, assume the defense of such Claim, with counsel reasonably satisfactory to the indemnified Party to represent the indemnified Party and any others the indemnifying Party may designate in such proceeding and shall pay the fees and disbursements of such counsel related to such proceeding. In any such proceeding, any indemnified Party shall have the right to retain its own counsel, but the fees and expense of such counsel shall be at the expense of such indemnified Party unless (i) the indemnifying Party and the indemnified Party shall have mutually agreed to the retention of such counsel or (ii) the named Parties to any such proceeding (including any impleaded parties) include both the indemnifying Party and the indemnified Party and representation of both Parties by the same counsel would be an impermissible conflict of interest under applicable professional rules governing legal counsel. It is agreed that the indemnifying Party shall not, in respect of the legal expense of any indemnified Party in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the fees and expenses of more than one separate firm (in addition to any local counsel) for all such indemnified Parties and that all such fees and expenses shall be reimbursed as they are incurred.

(b) The indemnifying Party shall not be liable for any settlement of any proceeding affected without its written consent, but if settled with such consent or if there is a final judgment for the plaintiff, the indemnifying Party agrees to indemnify the indemnified Party from and against any Loss by reason of such settlement or judgment. Without the prior written consent of the indemnified Party, no indemnifying Party shall consent to any settlement of any pending or threatened proceeding that provides for injunctive relief or other non-monetary relief in respect of which any indemnified Party is or could have been a party and indemnity could have been sought hereunder by such indemnified Party, including without limitation, if such settlement (i) involves any finding or admission of any violation of any Law or any of the rights of any person, (ii) releases any claim(s) of the indemnified Party or (iii) has any adverse effect on

any other Claims that have been or may be made against the indemnified Party, or (iv) if such settlement involves only the payment of money, unless it includes an unconditional release of such indemnified Party of all liability on claims that are the subject of such proceeding.

(c) An indemnified Party may assume control of the defense of any Claim if (i) it irrevocably waives its right to indemnity for that Claim under this Article 13 (Indemnities), or (ii) without prejudice to its full right to indemnity hereunder, if (A) the indemnifying Party fails to provide reasonable assurance to the indemnified Party of its financial capacity to defend or provide indemnification with respect to such Claim, (B) the indemnified Party determines in good faith that there is a reasonable likelihood that a Claim would materially and adversely affect it or any other indemnities other than as a result of monetary damages that would be fully reimbursed by an indemnifying Party under the Master Agreement, or (C) the indemnifying Party refuses or fails to timely assume the defense of such Claim.

(d) An indemnifying Party required to provide an indemnity to an indemnified Party under this Article 13 (Indemnities) shall have no obligation for any Claim under this Section if:

(i) the indemnified Party fails to notify the indemnifying Party of such Claim as provided above, but only to the extent that the defense of such Claim is prejudiced by such failure;

(ii) the indemnified Party fails to tender control of the defense of such Claim to the indemnifying Party as provided in this Section 13.3 (Indemnification Procedures); or

(iii) the indemnified Party fails to provide the indemnifying Party with reasonable cooperation in the defense of such Claim (the cost thereof to be borne by the indemnifying Party).

14. INSURANCE, TITLE AND RISK OF LOSS

14.1. Provider Insurance

(a) Workers' Compensation - (i) Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization, Workers' Compensation and other similar insurance required by state or federal laws. In the event that Provider fails to maintain such insurance as required by law, Provider acknowledges and agrees that it will not seek or be entitled to any coverage under the Company's insurance. Permissible self-insurance will be acceptable subject to submission of a copy of appropriate governmental authorization and qualification by Provider.

(ii) In addition, if Workers' Compensation is required, Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization, Employers Liability insurance with minimum limits for bodily injury from accident of FIVE HUNDRED THOUSAND DOLLARS ($500,000) - each accident; for bodily injury from disease of FIVE HUNDRED THOUSAND DOLLARS ($500,000) - each employee; and for bodily injury from disease of FIVE HUNDRED THOUSAND DOLLARS ($500,000) - each policy limit; or other minimum limits as specified in the Work Authorizations.

(b) Commercial General Liability Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization, Commercial General Liability insurance with a bodily injury and property damage combined single limit of liability of at least FIVE MILLION DOLLARS ($5,000,000) or other minimum limits as specified in the Work Authorizations for any occurrence. Such insurance will include coverage in like amount for products/completed operations, contractual liability, and personal and advertising injury. "Claims made" policies are not acceptable under this section.

(c) Automobile Liability Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full effect at all times during the term of each Work Authorization, Automobile Liability insurance with a bodily injury and property damage combined single limit of at least ONE MILLION DOLLARS ($1,000,000) or other minimum limits as specified in the Work Authorizations per accident.

(d) Professional Liabilities/Errors and Omissions Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain Professional Liability/Errors and Omissions insurance with minimum limits of TEN MILLION DOLLARS ($10,000,000) per occurrence and per policy aggregate. Such insurance shall include coverage for claims or losses with respect to or resulting directly or indirectly from the performance or nonperformance of Services under the Contract Documents including but not limited to software development and enhancement, and intellectual property infringement or misappropriation such as copyrights, trademarks, service marks, and trade dress, however excludes trade secrets and patent infringement. The retroactive coverage date of the insurance policy shall be no later than the Effective Date of this Master Agreement. Such insurance shall remain in effect after termination of this Master Agreement in order to respond to any claims or losses subsequently made. Insurance required by this subsection shall be maintained in full effect at all times during the term of each Work Authorization and for THREE (3) years thereafter.

(e) Network Security/Privacy Liability Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization Network Security/Privacy Liability insurance, with minimum limits of TWENTY FIVE MILLION DOLLARS ($25,000,000) per occurrence and per policy aggregate. Such insurance shall include, but not be limited to network risks such as data breaches, data theft, unauthorized access/use, negligent transmission of a computer virus, identity theft, and any invasion, violation, breach or infringement of any right to privacy resulting from both electronic and non-electronic events with respect to any personally identifiable information in any form. The retroactive coverage date of the insurance policy shall be no later than the Effective Date of this Master Agreement. Such insurance shall remain in effect after termination of this Master Agreement in order to respond to any claims or losses subsequently made.

(f) Commercial Crime Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization Commercial Crime Insurance with minimum limits of TWO MILLION DOLLARS ($2,000,000) per occurrence covering dishonest acts of employees, agents, contractors and subcontractors. Such insurance shall also include third party coverage as it pertains to Company’s money, securities, or other property. Such insurance shall remain in effect after termination of this Master Agreement in order to respond to any claims or losses subsequently made.

14.2. Other Conditions

(a) Waiver of Subrogation - Provider and anyone acting under its direction or control or on its behalf will cause its insurers (except for Workers' Compensation and Professional Errors and Omissions insurance) to waive all rights of subrogation which Provider or its insurers may have against Company, Company's agents, or Company's employees.

(b) Certificates of Insurance - Concurrent with the execution of this Master Agreement, Provider shall provide Company with a certificate of insurance ("**COI**") certifying that each of the foregoing insurance coverages is in force. If the COI is not affixed to this Master Agreement, then Provider shall provide a copy of the COI (and any subsequent updates) to Company's Legal Department (at: P.O. Box 2750, Honolulu, Hawaii 96840-001). The COI MUST reference this Master Agreement contact number and the date of this Master Agreement and it shall reference Provider by name. Provider will immediately provide written notice to the Company should any of the insurance policies required herein be cancelled, limited in scope, or not renewed upon expiration. Receipt of any certificate showing less coverage than requested is not a waiver of the Provider's obligation to fulfill the requirements

(c) Rating - The insurance required under this Master Agreement shall be provided by insurance companies that have a minimum A.M. Best Rating of A-VII.

(d) Coverage - Provider and any contractor or subcontractor shall be responsible for payment of any and all deductibles, self-insured retentions, and self-insurance carried by each of them under their respective insurance program(s). The coverage afforded under any insurance policy obtained by any of them pursuant to the Contract Documents shall be primary and not be in excess of, or contributing with, any insurance maintained by Company and its assigns. Provider and its contractors or subcontractors acting under its direction, control or on its behalf shall not perform Services under the Master Agreement without the prerequisite insurance. Unless previously agreed to in writing by Company, Provider and its contractors or subcontractors acting under its direction, control or on its behalf shall comply with the insurance requirements herein and Provider agrees to be solely responsible for any deficiencies in the coverage, policy limits and endorsements of its contractors or subcontractors performing any portion of the Services under the Contract Documents.

(e) Survival - Notwithstanding any other provision in the Contract Documents to the contrary, the obligations to indemnify and hold harmless or to maintain required insurance coverages shall survive the expiration or termination of this Master Agreement to the extent necessary to cover claims or losses arising in connection this Contract Documents.

(f) Waiver of Defense - To the extent Provider's indemnification obligations apply, without limitation, to injuries, deaths, or accidents involving Provider's employees, contractors, or subcontractors that may arise directly or indirectly as a result of the performance of Services, Provider, its contractors or subcontractors, waive as a defense any immunity that it may have or claim under any state laws or regulations related to workers' compensation or employee injuries.

14.3. Title

Title and ownership of the Materials shall pass to Company upon delivery to and acceptance by Company thereof.

14.4. Risk of Loss

Risk of loss to the Materials shall pass to Company upon delivery to and acceptance by Company. Provider is responsible for and shall bear all risk of loss or damage to Materials, and all materials, tools and Materials delivered to Company until the acceptance by the Company except to the extent that such loss or damage results from Company's negligence. Company is not responsible for any loss or damage to the Materials prior to acceptance, or to materials, tools Equipment of Provider or its subcontractors resulting from a tortious action of any Third Parties. Risk of loss to the Provider Information System shall remain with the Provider.

15. DISPUTE RESOLUTION

15.1. Procedure

(a) Procedure. Except for the right of either Party to apply to a court of competent jurisdiction for injunctive relief, any controversy or claim arising out of or relating to the Contract Documents, other than as to ownership or title to Intellectual Property Rights, breach of the protections of the Confidential Information, or a Party's failure to provide the indemnity obligations herein, either Party shall first, prior to filing a lawsuit (except as previously provided) attempt to resolve a Dispute hereunder as follows. In the event of a Dispute that has not been resolved in accordance with any dispute resolution provisions in the applicable SOW, the Parties will adhere to the following procedure set forth in this section prior to initiating any available remedies.

(b) Notice. Either Party may notify the other Party in writing of the occurrence of a Dispute and establish a mutually convenient time and place to discuss the Dispute. In any event, the meeting will occur within a commercially reasonable period of time (not to exceed thirty (30) days) after the notice of Dispute is delivered ("**Notice Date**") and shall take place between Provider's Chief Financial Officer, and Company's Senior Vice President of Operations, or such other executive identified in a Work Authorization..

(c) Escalation. If the meeting does not resolve the Dispute, either Party may then give the other Party written notice that the dispute continues. Within a commercially reasonable period of time after such notice, which shall not exceed thirty (30) days, designated executives from each Party will meet to discuss the issue at a mutually convenient time and place. Such executives shall be at each Party's vice president level or above. If the Dispute has not been resolved within a commercially reasonable period of time, which shall not to exceed sixty (60) days (or such other time that the Parties mutually agree upon in writing) after the Notice Date, either Party may pursue applicable remedies under the Contract Documents, at law or in equity.

15.2. Continued Performance

Except where directly prevented from doing so by the matter in Dispute, Provider agrees to continue performing its obligations under the Contract Documents while any Dispute

is being resolved unless and until such obligations are terminated by the termination or expiration of the Master Agreement.

15.3. Exceptions to Dispute Resolution Procedures

Notwithstanding any other provision of the Contract Documents, either Party may resort to court action for injunctive relief at any time if, in such Party's good faith belief, the Dispute Resolution Procedures would permit or cause irreparable injury to such Party or any Third Party claiming against such Party, due to delay arising out of the Dispute Resolution Procedures.

16. *INTENTIONALLY OMITTED*

17. GENERAL

17.1. Relationship of Parties

(a) No Joint Venture - The Contract Documents (including without limitation the SOW) shall not be construed as constituting either Party as partner, joint venture or fiduciary of the other Party or to create any other form of legal association that would impose liability upon one Party for the act or failure to act of the other Party, or as providing either Party with the right, power or authority (express or implied) to create any duty or obligation of the other Party.

(b) Publicity - Each Party will submit to the other Party all advertising, written sales promotion, press releases and other publicity matters relating to the Contract Documents in which the other Party's name or marks are mentioned or language from which the connection of such name or marks may be inferred or implied, and will not publish or use such advertising, sales promotion, press releases, or publicity matters without prior written approval of the other Party.

17.2. Entire Agreement

The Contract Documents shall constitute the entire understanding between the parties, superseding any and all previous understandings, oral or written, pertaining to the subject matter contained herein. The parties have entered into this Master Agreement and the Contract Documents in reliance upon the representations and mutual undertakings contained herein and therein and not in reliance upon any oral or written representation or information provided to one Party by any representative of the other Party. Neither Party shall claim at any time that it entered into this Master Agreement or the other Contract Documents in whole or in part based on any representation not stated in those documents.

17.3. Force Majeure

(a) Generally - Each Party will be excused from performance under the Contract Documents for any period and to the extent (and only to the extent) that it is prevented from or delayed in performing any obligations pursuant to the Contract Documents, in whole or

in part, as a result of a Force Majeure Event. If either Party is prevented from, or delayed in performing any of its obligations under the Contract Documents by a Force Majeure Event, the Party claiming the Force Majeure Event has occurred shall promptly notify the other Party verbally (to be confirmed in writing within twenty-four (24) hours of the inception of the delay) of the occurrence of a Force Majeure Event and describe, in reasonable detail, the circumstances constituting the Force Majeure Event and of the obligations, the performance of which are thereby delayed or prevented. The Party claiming that a Force Majeure Event has occurred shall continue to use commercially reasonable efforts to mitigate the impact or consequence of the event on the other Party and to recommence performance whenever and to whatever extent possible without delay. The affected Party shall provide the other Party with daily updates (and more frequent updates if requested) as to the status of its efforts to recommence performance and written notice upon conclusion of the Force Majeure Event. Subject to Section 17.3 (c) (Extended Nonperformance) below, in the event of any Force Majeure Event, Company shall not pay any Charges in respect of the Services so affected, provided that Company shall pay the Provider for the Services rendered under this Master Agreement prior to such Force Majeure Event.

(b) Exclusions. Notwithstanding any other provision of this section, the non-performing Party shall not be excused under this Section 17.3 (Force Majeure) for (i) any non-performance of its obligations under the Contract Documents having a greater scope or longer period than is justified by the Force Majeure Event, or (ii) the performance of obligations that should have been performed prior to the Force Majeure Event.

(c) Extended Nonperformance - If Company determines in good faith that a Force Majeure Event substantially prevents, hinders or delays Provider's performance of any Services for more than twenty-four (24) consecutive hours or more than thirty-six (36) hours in a thirty (30) day period, then Company has the right to terminate the affected Services in whole or in part.

(d) Definition - The term "**Force Majeure Event**" as used herein shall mean any cause beyond the control and not due to the fault or negligence of the Party affected, and which by reasonable efforts the Party affected is unable to overcome, including without limitation the following: acts of God; fire, flood, landslide, lightning, earthquake, hurricane, tornado, storm, freeze, volcanic eruption or drought; blight, famine, epidemic or quarantine; act or failure to act of the other Party; theft; casualty; war; invasion; civil disturbance; explosion; acts of public enemies; or sabotage.

17.4. Waiver

No waiver of any breach of any provision of the Master Agreement or any other Contract Documents shall constitute a waiver of any prior, concurrent or subsequent breach of the same or any other provisions hereof.

17.5. Severability

If any provision of the Master Agreement or any other Contract Documents shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby, and such provision shall be deemed to be restated to reflect the Parties' original intentions as nearly as possible in accordance with applicable Law(s).

17.6. Counterparts

The parties agree that this Master Agreement, all Work Authorizations and other Contract Documents hereunder may be executed in counterparts, each of which shall be deemed an original, and all of which shall together constitute one and the same instrument binding all parties notwithstanding that all of the parties are not signatories to the same counterparts. For all purposes, duplicate unexecuted and unacknowledged pages of the counterparts may be discarded and the remaining pages assembled as one document. This Master Agreement, Work Authorizations and other Contract Documents may also be executed by exchange of executed copies via facsimile or other electronic means, such as PDF, in which case, but not as a condition to the validity of the Master Agreement, each Party shall subsequently send the other Party by mail the original executed copy. A Party's signature transmitted by facsimile or similar electronic means shall be considered an "original" signature for purposes of the Contract Documents.

17.7. Binding Nature and Assignment

The Contract Documents will be binding on the Parties and their respective successors and permitted assigns. Except as provided in this Section 17.7 (Binding Nature and Assignment) neither Party may, or will have the power to, assign any of the Contract Documents (or any rights thereunder) by operation of law or otherwise without the prior written consent of the other, except that Company may assign its rights and delegate its duties and obligations under this Master Agreement (i) to an Affiliate or (ii) as a whole as part of the sale or transfer of all or substantially all of its assets and business, including by merger or consolidation with a Person that assumes and has the ability to perform Company's duties and obligations under the Contract Documents, without the approval of Provider. Any attempted assignment that does not comply with the terms of this Section 17.7 (Binding Nature and Assignment) shall be null and void.

17.8. Notices

(a) Whenever one Party is required or permitted to give a notice, communication or consent to the other Party under the Contract Documents, such notice, communication or consent will be in writing unless otherwise specifically provided herein and will be deemed given when delivered by hand, one (1) day after being given to an express courier with a reliable system for tracking delivery, or five (5) days after the day of mailing, when mailed by United States mail or registered or certified mail, return receipt requested, postage prepaid.

(b) **Notifications will be addressed as follows:**

In the case of Provider: with a copy to:

Provider Project Manager

[**ADDRESS]**

In the case of Company:	with a copy to:
Company Designated Representative Via U.S. Mail Hawaii Electric Company, Inc. P.O. Box 2750 Honolulu, HI 96840 Attention: _____ Via Overnight Mail or Hand Delivery: **[INSERT]**	Via U.S. Mail: Hawaiian Electric Company, Inc. P.O. Box 2750 Honolulu, HI 96840 Attention: Legal Dept. Via Overnight Mail or Hand Delivery: Hawaiian Electric Company, Inc. 1001 Bishop Street, Suite 1100 Honolulu, HI 96813 Attention: Legal Dept.

Either Party hereto may from time to time change its address for notification purposes by giving the other prior written notice of the new address and the date upon which it will become effective.

17.9. Governing Law; Forum

This Master Agreement, all Work Authorizations and all other Contract Documents hereunder and thereunder are made under and shall be governed by and construed in accordance with the laws of the State of Hawaii. Each Party agrees and consents that any Dispute arising out of the Contract Documents, however defined, shall be brought in the State of Hawaii in a court of competent jurisdiction.

17.10. Further Assurances

During the Term and at all times thereafter, each Party shall provide to the other Party, at its request, reasonable cooperation and assistance (including the execution and delivery of affidavits, declarations, oaths, assignments, samples, specimens and any other documentation) as necessary to effect the terms of the Contract Documents.

17.11. Amendments

This Master Agreement, all Work Authorization and the other Contract Documents may be amended or supplemented only by written instrument duly executed by each of the parties. Any terms and conditions purporting to vary from the Contract Documents that were not properly mutually executed as required hereunder shall not be effective or binding on the other Party.

17.12. Attorneys' Fees and Costs

If there is a dispute between the parties and either Party institutes a lawsuit, arbitration, mediation, or other proceeding to enforce, declare, or interpret the terms of this Master Agreement, the prevailing Party shall be awarded its reasonable attorneys' fees and costs.

IN WITNESS WHEREOF, the parties hereto, each acting under due and proper authority, have executed this Master Agreement as of the date written above.

PROVIDER:
[INSERT FULL LEGAL NAME]

By: _____

Name: _____

Title: _____

COMPANY:
HAWAIIAN ELECTRIC COMPANY, INC.

By: _____

Name: _____

Title: _____

By: _____

Name: _____

Title: _____

Exhibit 1

Definitions

The following terms used in the Technology Consulting Master Services Agreement (No. _____) shall have the meanings indicated:

1.01 "**Action Plan**" has the meaning given in Section 8.5(f) (Action Plan).

1.02 "**Affected Products"** has the meaning given in Section 6.1(j)(Open Source).

1.03 "**Affiliate**" means, with respect to a Party, any entity at any tier that controls, is controlled by, or is under common control with that Party. For purposes of this definition, the term "control" (including with correlative meanings, the terms "controlled by" and "under common control with") means the possession directly or indirectly of the power to direct or cause the direction of the management and policies of an entity, whether through the ownership of voting securities, by trust, management agreement, contract or otherwise. A person or entity will be conclusively deemed to "control" another person or entity, if it is the "beneficial owner," as defined pursuant to Section 12 of the Securities Exchange Act of 1934, as amended, and the related rules and regulations, of securities of that entity having the power to cast more than fifty percent (50%) of the votes entitled to be cast for the election of directors or similar managers of such entity.

1.04 "**Audit Compliance Liaison"** has the meaning given in Section 8.5(j) (Provider Compliance Manager).

1.05 "**Billing Period**" has the meaning given in Section 4.4(b)(Invoicing).

1.06 "**Business Days**" means each Monday through Friday, other than national holidays recognized by Company.

1.07 "**CA**" has the meaning given in Section 10.1(d).

1.08 "**Change**" means: (1) any change to (a) the Services, (b) the Service Levels or (c) the Provider Information System used to provide the Services that, in each case, would alter the (i) functionality, Service Levels or technical environment of the Provider Information System used to provide the Services, (ii) manner in which the Services are provided, (iii) composition of the Services or (iv) cost to Company or Provider of the Services; (2) any change to (a) the Project Site or (b) the Company Security Requirements; (3) any change that disrupts the provision of the Services; or (4) any amendment, modification, addition or deletion proposed by a Party to the Contract Documents.

1.09 "**Change of Control**" means the transfer of Control (as defined in the definition of "**Affiliate**"), or sale of all or substantially all of the assets (in one or more transactions), of a Party or other designated person or entity, from the person or persons that hold such Control of such Party or other designated person or entity on the Effective Date to another person or persons, but shall not include a transfer of Control, or such a sale of assets, to an Affiliate of such Party or the loss of Control by such person or persons without a resulting transfer to another person or persons (e.g., pursuant to the issuance of voting securities representing Control in a broadly-distributed public offering) or other designated person or entity.

1.10 "**Change Order**" means a document that amends the Master Agreement, Work Authorization, SOW, or any other Contract Document and which is executed by the Parties, in accordance with the change order procedures in the applicable Work Authorization or SOW.

1.11 "**Charges**" are fees and other compensable items set forth in the "Price".

1.12 "**Claim**" means any civil, criminal, administrative, regulatory or investigative action or proceeding commenced or threatened by a Third Party, including, without limitation, Governmental Authorities and regulatory agencies, however described or denominated.

1.13 "**COI**" has the meaning given in Section 14.2(b).

1.14 "**Commencement Date**" means the date(s) on which Provider begins to provide Services, pursuant to a properly executed Work Authorization for each SOW, to the Company as agreed upon by the Parties. Each Work Authorization shall identify the applicable Commencement Date.

1.15 "**Commission**" has the meaning given in Section 10.1(d).

1.16 "**Company**" has the meaning given in the preamble.

1.17 "**Company Auditors**" has the meaning given in Section 8.5(b).

1.18 "**Company Audits**" has the meaning given in Section 8.5(d)(i).

1.19 "**Company Confidential Information**" means the Confidential Information of the Company, including the Company Data.

1.20 "**Company Data**" means (i) all data and information generated, provided or submitted by, or caused to be generated, provided or submitted by, the Company in connection with the Services; (ii) all data and information regarding the business of the Company collected, generated or submitted by, or caused to be generated, provided or submitted by, Provider and/or its Affiliates and subcontractors; (iii) all such data and information processed or stored, and/or then provided to or for the Company Group, as part of the Services, including, without limitation, data contained in forms, reports and other similar documents provided by Provider as part of the Services; and (iv) Personally Identifiable Information.

1.21 "**Company Indemnitees**" has the meaning given in Section 13.1.

1.22 "**Company Proprietary Software**" means shall mean the Software, including the Software, and Related Documentation owned, acquired or developed by Company and used in connection with the provision of the Services.

1.23 "**Company Pre-existing Material**" has the meaning given in Section 9.3(b).

1.24 "**Company Rules**" has the meaning given in Section 3.2(b).

1.25 "**Company Security Requirements**" means the Physical Security and Systems Security measures required pursuant to the Exhibit 3.

1.26 "**Company Software**" means the Company Proprietary Software and Company Third Party Software listed on the "Company Software" Exhibit in the applicable SOW that will be used by Provider in performing and providing Services under the Contract Documents.

1.27 "**Company Systems**" means the Equipment, Company Software, data networks and systems used and operated by the Company for its technology requirements, excluding the Provider Information System.

1.28 "**Company Third Party Software**" means the Software and Related Documentation that is licensed or leased by Company from a third party and used in connection with the provision of the Services.

1.29 "**Company Tools**" means to the Tools owned or licensed by Company and identified in the applicable SOW.

1.30 "**Company's Designated Representative**" is the person so-identified as such in the applicable Work Authorization.

1.31 "**Contract Documents**" has the meaning given in Section 1.1(b).

1.32 "**Contract Price**" see the definition of "Price" below.

1.33 "**Contract Year**" means each twelve-month period commencing on the Effective Date or any anniversary of the Effective Date during the Term.

1.34 "**Derivative Work**" means a derivative work as defined in Title 17 U.S.C. § 101, as amended.

1.35 **"Developed Software**" shall mean any Software, modifications or enhancements to Software and Related Documentation developed pursuant to this Master Agreement by or on behalf of (1) Provider, (2) Provider subcontractors, (3) Provider and Company or Company subcontractors jointly, (4) Provider subcontractors and Company or Company subcontractors jointly or (5) Provider, Provider subcontractors, Company and Company subcontractors jointly.

1.36 "**Disabling Code**" means computer programming code which could have the effect of permitting improper use, access, deletion or modification of, or disabling, deactivating, damaging or shutting down one or more software programs or systems and/or hardware or hardware systems, including "time bombs," "protect codes," "data destruction keys," "trap doors" and similar code or devices.

1.37 "**Disclosing Party**" has the meaning given in Section 10.1(a).

1.38 "**Dispute**" means any dispute, controversy or Claim, including, without limitation, situations or circumstances in which the Parties are required to mutually agree on additions, deletions or changes to terms, conditions or Charges, arising out of, or relating to, the Master Agreement.

1.39 "**Dispute Resolution Procedures**" means the process for resolving Disputes set forth in Article 15 of the Master Agreement.

1.40 "**Effective Date**" has the meaning given in the preamble.

1.41 "**Embedded Provider Software**" has the meaning given in Section 9.6.

1.42 **"Environment**" has the meaning given in Section 5.5.

1.43 "**Equipment**" shall mean computers and related equipment, including central processing units and other processors, networks, controllers, modems, communications and telecommunications equipment (voice, data and video), cables, storage devices, printers, terminals, other peripherals and input and output devices, and other tangible mechanical and electronic equipment intended for the processing, input, output, storage, manipulation, communication, transmission and retrieval of information and data.

1.44 "**Execution Date**" means the date that any Work Authorization or SOW, respectively, is signed by both parties.

1.45 "**Financial Audits**" has the meaning given in Section 8.5(c).

1.46 "**Force Majeure Event**" has the meaning given in Section 17.3(d).

1.47 "**Governmental Authority**" means any nation or government, any federal, state, province, territory, city, town, municipality, county, local or other political subdivision thereof or thereto, any quasi-Governmental Authority, and any court, tribunal, arbitral body, taxation authority, department, commission, board, bureau, agency, instrumentality thereof or thereto or otherwise which exercises executive, legislative, judicial, regulatory or administrative functions of or pertaining to government.

1.48 "**Intellectual Property Rights**" means any and all intellectual property rights existing from time to time under any Law including patent law, copyright law, semiconductor chip protection law, moral rights law, trade secret law, trademark law (together with all of the goodwill associated therewith), unfair competition law, publicity rights law, or privacy rights law, and any and all other proprietary rights, and any and all applications, renewals, extensions and restorations of any of the foregoing, now or hereafter in force and effect worldwide. For purposes of this definition, rights under patent law shall include rights under any and all patent applications and patents (including letters patent and inventor's certificates) anywhere in the world, including, without limitation, any provisionals, substitutions, extensions, supplementary patent certificates, reissues, renewals, divisions, continuations in part (or in whole), continued prosecution applications, requests for continued examination, and other similar filings or stages thereof provided for under the laws of the United States, or of any other country.

1.49 **"Law(s)**" means all applicable laws (including those arising under common law), statutes, codes, rules, regulations, reporting or licensing requirements, ordinances and other pronouncement having the effect of law of the United States, any foreign country or any domestic or foreign state, county, city or other political subdivision, including those promulgated, interpreted or enforced by any governmental or regulatory authority, and any order of a court or governmental agency of competent jurisdiction. Laws include all Privacy Laws.

1.50 "**Losses**" means all judgments, settlements, awards, damages, losses, charges, liabilities, penalties, interest claims (including taxes and all related interest and penalties incurred directly with respect thereto), however described or denominated, and all related reasonable costs, expenses and other charges (including all reasonable attorneys' fees and reasonable internal and external costs of investigations, litigation, hearings, proceedings,

document and data productions and discovery, settlement, judgment, award, interest and penalties), however described or denominated.

1.51 "**Malware**" means computer software, code or instructions that: (a) adversely affect the operation, security or integrity of a computing, telecommunications or other digital operating or processing system or environment, including without limitation, other programs, data, databases, computer libraries and computer and communications equipment, by altering, destroying, disrupting or inhibiting such operation, security or integrity; (b) without functional purpose, self-replicate written manual intervention; (c) purport to perform a useful function but which actually perform either a destructive or harmful function, or perform no useful function and utilize substantial computer, telecommunications or memory resources; or (d) without authorization collect and/or transmit to third parties any information or data; including such software, code or instructions commonly known as viruses, Trojans, logic bombs, worms, adware and spyware.

1.52 "**Master Agreement**" has the meaning set forth in the preamble.

1.53 "**Materials**" means computer programs, computer program listings, computer program tools, or computer program documentation, reports and drawings, as well as user manuals, charts, graphs and other written documentation and machine-readable text and files, including, computer programming code (including source code and object code) and all other works of authorship.

1.54 "**Notice Date**" has the meaning given in Section 15.1(b).

1.55 "**Notification Related Costs**" means Company's internal and external costs associated with addressing and responding to a Security Breach, including but not limited to: (a) preparation and mailing or other transmission of legally required notifications; (b) preparation and mailing or other transmission of such other communications to customers, agents or others as Company deems reasonably appropriate; (c) establishment of a call center or other communications procedures in response to such Security Breach (e.g., customer service FAQs, talking points and training); (d) public relations and other similar crisis management services; (e) legal and accounting fees and expenses associated with Company's investigation of and response to such event; and (f) costs for commercially reasonable credit reporting services that are associated with legally required notifications or are advisable under the circumstances.

1.56 "**Open Source Software**" means software that (a) requires a licensor to cause source code to be distributed with the software or made available to any third party when the software is distributed or otherwise provided in any fashion to a third party; (b) restricts or impairs in any way Company's ability to license the software pursuant to terms of Company's choosing; (c) impacts in any fashion or limit Company's ability to enforce its patent or other intellectual property rights against any third party in any manner; or (d) Company's rights to will be terminated or affected in any manner if Company asserts any of its intellectual property rights against any third party in connection with such software or otherwise. Without limitation of the foregoing, Open Source Software shall include software subject to any version of the General Public License or the Lesser General Public License, or any license which has been certified as an "open source" license by the Open Source Initiative.

1.57 "**Operational Audits**" has the meaning given in Section 8.5(b).

1.58 "**Party**" or "**Parties**" means Company and/or Provider.

1.59 "**Pass Through Charges**" has the meaning set forth in the "Price".

1.60 "**PCAOB**" has the meaning given in Section 8.5(b).

1.61 "**Person**" means an individual, corporation, limited liability company, partnership, trust, association, joint venture, unincorporated organization or entity of any kind or nature, or a Governmental Authority.

1.62 "**Personally Identifiable Information**" means personally identifiable information of individuals, and any information that may be used to track, locate or identify such individuals (or which is otherwise protected by Law), which is generated by or disclosed to Provider or its subcontractors in connection with the Services, and includes such information of Company employees and of individuals who seek to obtain, obtain, or have obtained products or services from the Company, which products and services are used or intended to be used for personal, family or household purposes.

1.63 "**Physical Security**" means physical security at any Location housing systems maintained by Provider or its agents or subcontractors in connection with the Services and in the course of physical transportation of assets used by Provider in performing the Services and physical media including Company Confidential Information.

1.64 "**Pre-existing Materials**" has the meaning given in Section 9.5.

1.65 "**Privacy Laws**" means (a) all applicable international, federal, state, provincial and local laws, rules, regulations, directives and governmental requirements currently in effect and as they become effective relating in any way to the privacy, confidentiality or security of Personally Identifiable Information including, without limitation, Cal. Civ. Code § 1798.81.5, 201 Mass. Code Reg. 17.00, the Canadian Personal Information Protection and Electronic Documents Act (PIPEDA); the Controlling the Assault of Non-Solicited Pornography and Marketing Act (CAN-SPAM); the FTC Disposal of Consumer Report Information and Records Rule, 16 C.F.R. § 682 (2005); and all other similar international, federal, state, provincial, and local requirements, (b) all applicable industry standards concerning privacy, data protection, confidentiality or information security currently in effect and as they become effective, including without limitation the Payment Card Industry Data Security Standard, and any other similar standards, and (c) applicable provisions of all Company privacy policies, statements or notices that are provided or otherwise made available to Provider.

1.66 "**Process**" or "**Processing**" means any operation or set of operations which is performed upon Personally Identifiable Information, whether or not by automatic means, such as collection, recording, organization, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, blocking, erasure or destruction.

1.67 "**Project Site**" means the Company premises where the Services shall be performed.

1.68 "**Price**" or "**Contract Price**" shall mean the price for the Services provided under a Work Authorization.

1.69 "**Project Manager"** means the individual assigned by the Provider to be the focal point for communications with the other Party regarding the Contract Documents. A Party's Project Manager is authorized to execute any Change Order and the Work Authorization for any SOW

on behalf of that Party, subject to the signature authority restrictions for the Company set forth in Section 1.2(f).

1.70 "**Provider Equipment**" means all Equipment owned or leased by Provider that is used, directly or indirectly, to provide the Services.

1.71 "**Provider Indemnitees**" has the meaning given in Section 13.2.

1.72 "**Provider Information System**" means the Provider Equipment, Provider Software, data network(s) and systems provided and/or used (whether owned, under contract and/or licensed) by Provider to perform and provide the Services.

1.73 ["**Provider Parent**" means **[NAME].]**

1.74 "**Provider Pre-existing Material**" has the meaning given in Section 9.3(a).

1.75 "**Provider Proprietary Software**" means shall mean the Software and Related Documentation owned, acquired or developed by or on behalf of Provider (and any modifications or enhancements thereto), excluding in each case the Developed Software, and used in connection with the Services or with any Provider Software or Company Software.

1.76 "**Provider Records** has the meaning given in Section 8.5(a).

1.77 "**Provider Software**" means the Provider Proprietary Software and Provider Third Party Software.

1.78 "**Provider Third Party Software**" means the Software and Related Documentation licensed, leased or otherwise obtained by Provider from a third party that is used in connection with the Services or with any Provider Software or Company Software.

1.79 "**Provider Tools**" means the tools described in each applicable SOW.

"**Receiving Party**" has the meaning given in Section 10.1(a).

1.80 **"Related Documentation"** shall mean, with respect to Software and Tools, all materials, documentation, specifications, technical manuals, user manuals, flow diagrams, file descriptions and other written information that describes the function and use of such Software or Tools, as applicable.

1.81 "**Reports**" has the meaning given in Section 3.7.

1.82 "**Responsibilities**" has the meaning given in Section 3.1(b).

1.83 "**Security Breach**" means (a) any circumstance pursuant to which applicable Law requires notification of such breach to be given to affected parties or other activity in response to such circumstance; or (b) any actual, attempted, suspected, threatened, or reasonably foreseeable circumstance that compromises, or could reasonably be expected to compromise, either Physical Security or Systems Security (as such terms are defined below) in a fashion that either does or could reasonably be expected to permit unauthorized Processing, use, disclosure or acquisition of or access to any Company Data, Company Software, Work Product or any Company Confidential Information developed, maintained, processed or transmitted by Provider or its agents or subcontractors in connection with the Services.

1.84 "**Service Level**" has the meaning set forth in the "Service Level Agreement" included in the applicable SOW. Each "Service Level Agreement" shall be promptly updated and modified from time to time by the Parties to reflect changes to the Service Levels related to the associated Services.

1.85 "**Service Level Agreement**" means the "Service Level Agreement" included in the applicable SOW specifying the service level methodology and the Service Levels applicable to the Services described in each SOW, remedies for Provider's failure to comply with such Service Levels, including but not limited to applicable Service Level Credits, procedures for modifying and improving Service Levels and related provisions.

1.86 "**Service Level Credits**" has the meaning set forth in the "Service Level Agreement" included in the applicable SOW.

1.87 "**Service Level Termination Event**" has the meaning set forth in the applicable "Service Level Agreement".

1.88 "**Services**" means the services, functions and responsibilities described in this Master Agreement (including the services, functions and responsibilities and projects described in any SOW) and any services, functions and responsibilities not specifically described in this Agreement, but which are required for the proper performance and delivery of the Services..

1.89 **"Software"** means the source code and object code versions of any applications programs, operating system software, computer software languages, utilities, other computer programs and Related Documentation, in whatever form or media, including the tangible media upon which such applications programs, operating system software, computer software languages, utilities, other computer programs and Related Documentation are recorded or printed, together with all corrections, improvements, updates and releases thereof.

1.90 **"SOW(s)"** has the meaning given in Section 1.1(b).

1.91 **"Subject Damages**" is defined in Section 12.1(a) of the Master Agreement.

1.92 "**Successor Provider**" means an entity that provides services to Company similar to the Services following the termination or expiration of the Master Agreement.

1.93 "**Systems Security**" means security of computer, electronic or telecommunications systems of any variety (including data bases, hardware, software, storage, switching and interconnection devices and mechanisms), and networks of which such systems are a part or communicate with, used directly or indirectly by Provider or its agents or subcontractors in connection with the Services.

1.94 "**Tax**" or "**Taxes**" means federal, state and local sales, use, excise, telecommunications, and other similar types of transfer taxes, fees or charges (including any related penalties, additions to tax, and interest), however designated or imposed, which are in the nature of a transaction tax, fee or charge, but not including any taxes, duties, fees or charges imposed on or measured by net or gross income or gross receipts, capital stock or net worth or in the nature of an income, capital, franchise, or net worth tax.

1.95 "**Term**" means the term of the Master Agreement as specified in Section 2.1.

1.96 "**Third Party**" means a person, business or entity other than the Company or the Provider.

1.91 "**Third Party Agreements**" means those agreements for which Provider has undertaken financial, management, operational, use, access and/or administrative responsibility and/or benefit in connection with the provision of the Services, and pursuant to which the Company has contracted with a Third Party Provider to obtain any Third Party products, software and/or services that will be used, accessed and/or managed in connection with the Services. Third Party Agreements are listed on "Third Party Agreements" Exhibit to the applicable SOW, which Exhibit shall be promptly updated and modified from time to time by the Parties to reflect the then-current Third Party Agreements.

1.92 "**Third Party Provider**" means a business or entity other than the Company or the Provider or its Affiliates or subcontractors that provides products, software and/or services under a Third Party Agreement**.**"

1.93 "**Third Party Software**" means _____.

1.94 "**Tools**" means any Software development and performance testing tools, know-how, methodologies, processes, technologies or algorithms and Related Documentation used by Provider in providing the Services.

1.95 "**Withholding Taxes**" means foreign, federal, and state and local taxes, fees, or charges which are imposed on or by reference to gross or net income or gross or net receipts and are required under Law to be withheld by Company from payments made to Provider under this Master Agreement (including any related penalties and interest thereon).

1.96 "**Work Authorization"** has the meaning set forth in Section 1.2.

1.97 "**Work Product**" has the meaning set forth in Section 9.5(a).

EXHIBIT 2
FORM OF WORK AUTHORIZATION

WORK AUTHORIZATION NO.
Under Purchase Order No. /Contract No.

I. Request for Quote

Under the terms and conditions of the Technology Consulting Master Services Agreement, dated _____, by and between _____ ("Provider") and Hawaiian Electric Company, Inc. ("Company"), Company hereby requests a proposal from Provider to perform the following Work:

_____
_____
_____

Dated: _____ _____
Company

II. Provider's Proposal

Provider hereby proposes to perform the Work described above in Section I, under said terms and conditions, for the following amount:_____.

Total not-to-exceed cost is _____. Total not-to-exceed manhours required is _____.

Work will begin no later than _____ and be completed on or before _____.

_____ will act as Provider's Project Manager during the performance of this Work.

Dated: _____ _____
Provider

III. Work Authorization

Provider's foregoing Proposal is accepted. Provider is authorized to perform the Work as proposed. Company's Designated Representative for this Work Authorization shall be _____.

Dated: _____ _____
Company

Dated: _____ _____
Company

[Add Additional Exhibits]

Appendix H – Standard Business Travel and Expense Terms

See electronic document called “Appendix H – Standard Business Travel and Expense Terms.pdf”.

Hawaiian Electric Company
Hawaii Electric Light Company
Maui Electric Company

Standard Business Travel and Expense Terms

1. Approved Class of Travel

a. Air Travel – Coach
b. Lodging – Budget (e.g. Best Western) or Moderate (e.g. Embassy Suites)
c. Transportation – Shuttle service, taxi or rental car. For rental cars, use compact size cars (full-size acceptable for 3 or more occupants)

2. Eligible Charges For Reimbursement

a. Company will not reimburse or compensate the consultant for using personal mileage for airfare for Company-related business.[1]
b. Company will only pay for the consultant's round trip airfare to the designated Company location, and will not pay for consultant's personal travel.
c. Company will not be responsible for consultant's airfare ticket change fees or penalties unless the changes were made at the request of the Company.
d. Company will not reimburse consultant for alcoholic beverages.
e. All consultant meals should be in connection with Company-related work and Company will reimburse for food and non-alcoholic beverages only.
f. Allowable Company-related work incidentals (e.g. parking, internet connection, etc.) are reimbursable to the consultant at cost.
g. Reasonable gratuities incurred in connection with Company-related work will be reimbursed to the consultant. Tips for restaurant services should be reported as part of the cost of the meal.
h. All charges submitted for reimbursement by the consultant must be supported by the actual invoice or original itemized receipt.
i. Company will reimburse the consultant for only those expenses that are reasonable, required, and approved.
j. Expenses that are optional (e.g. magazines, movies, etc.) or of a personal nature (e.g. over-the-counter drugs and toiletries) are not reimbursable to the consultant.

3. Non-Business Day Costs

Company will not reimburse the consultant for costs incurred on non-business days. Non-business days are days without a business purpose. However, days used in traveling or layovers because of no available flights and weekends or legal holidays between business days are generally considered business days for purposes of these terms, if Company-related work was conducted on the day before the weekend or holiday and additional Company-related work will be conducted on the day following the weekend or holiday.

[1] "Company" means Hawaiian Electric Company, Hawaii Electric Light Company or Maui Electric Company, as the case may be. "Consultant" means any consultant, contractor, vendor or other person or entity hired by a Company.

END

Attachment 4

Smart Grid Foundation Project

Exhibit E

Smart Grid Customer Facing Solutions Request for Proposal

Hawaiian Electric
Maui Electric
Hawai'i Electric Light

SMART GRID
CUSTOMER FACING SOLUTIONS

REQUEST
FOR
PROPOSALS

RFP NO. 031915-07

Issue Date: 03/28/2015

FREEDOM OF INFORMATION ACT (FOIA) NOTICE: This document contains trade secrets and/or proprietary, commercial, or financial information not generally available to the public. It is considered privileged and proprietary to The Companies in confidence with the understanding that its contents are specifically exempted from disclosure under the Freedom of Information Act [5 USC Section 552 (b) (4)] and shall not be disclosed by the recipient [whether it be Government (local, state, federal, or foreign), private industry, or non-profit organization] and shall not be duplicated, used, or disclosed, in whole or in part, for any purpose except to the extent in which portions of the information contained in this document are required to permit evaluation of this document, without the expressed written consent of The Companies.

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1 Request for Proposal (RFP) Structure

1.1 Introduction

Hawaiian Electric Company, Inc. hereby requests a proposal for The Smart Grid Customer Facing Solutions (CFS) for the Hawaiian Electric Company, Inc. (Hawaiian Electric) and its subsidiaries, Hawai'i Electric Light Company, Inc. (Hawai'i Electric Light) and Maui Electric Company, Limited (Maui Electric) hereinafter collectively referred to as "The Companies". The Companies invite suppliers to submit proposals for such products, consulting and implementation services in accordance with the requirements, terms, and conditions of this RFP.

This RFP sets forth the requirements for all products and services and solicits a detailed response from Bidders to include pricing and service descriptions in the specified format. Information set forth in this RFP is provided to allow Bidders maximum possible insight into the program as defined and known today. Please utilize this information as appropriate in crafting the Bidder's responses.

Note: The Companies reserve the right to modify this RFP at their sole discretion and will inform Bidders of changes as expediently as possible.

1.2 RFP Structure

This section describes how the RFP is structured and a brief description of each section.

Section One **RFP Structure**

This section outlines the sections of this RFP. Included is a brief description of each section.

Section Two **RFP Instructions**

This section outlines the instructions for responding to this RFP. Included are the general requirements for submittal of proposals.

Section Three **Project Description**

Initial introductory section provides background information on The Companies and an overview of the Smart Grid project, which leads to the issuing of this RFP.

Section Four **General Responsibilities**

This section includes the general responsibilities that the Selected Supplier and The Companies will have during the Customer Facing Solutions project (the Project).

Section Five **Proposal Submission Requirements**

This section describes each of the required sections of the proposal narrative to be submitted by each Bidder. The section concludes with a list of the ***required appendices.***

Section Six **Appendix A: Intent to Submit Bid Form**

This section contains an 'Intent to Submit Bid' form that must be completed by the Bidder and returned to The Companies.

Section Seven **Appendix B: Glossary**

This section contains a glossary of terms and acronyms that apply to this RFP and The Companies' Smart Grid Initiative.

Section Eight **Appendix C: Functional and Technical Requirements**

This section contains the Functional Requirements and product specific Technology Requirements to which the Bidder must review, respond, and return to The Companies, along with supporting information where required.. Completion is mandatory for consideration.

Section Nine **Appendix D: General Technology and Cybersecurity Requirements**

This section contains the General Technology and Cybersecurity Requirements to which the Bidder must review, respond, and return to The Companies, along with supporting information where required. Completion is mandatory for consideration.

Section Ten **Appendix E: Detailed Cost and Staffing Model**

This section contains a multi-tab pricing sheet that captures licensing fees, upgrade fees, maintenance fees for the CFS product, and the Bidder's rate card, implementation costs and training costs for the Bidder's services in support of the CFS implementation project. Completion is mandatory for consideration.

Section Eleven **Appendix F: EPMO Standards and Sample Templates**

This section contains the EPMO Standards and Sample Templates that may be used on this Project. They will be reviewed and adjusted as needed per collaborative agreements made between both parties in the project management phase.

Section Twelve **Appendix G: Technology Consulting Services Master Agreement Form**

This section contains The Companies' Technology Consulting Services Master Agreement Form.

Section Thirteen Appendix H: Business Travel and Expense Policy

This section contains The Companies' Business and Travel Expense Policy.

Should the Bidder find discrepancies or ambiguities in, or omissions from, this RFP that might affect price, it shall notify The Companies at once. Interpretation or clarification of the RFP bid documents, prior to the proposal due date will be made only by a written addendum issued to all Bidder who intend to submit a proposal.

2 Request for Proposal Instructions

This section describes instructions to Bidder in receipt of this Request for Proposal (RFP) in order for the Bidder to submit a proposal (referred to herein as "bid" or "proposal") to provide to The Companies with the proposed Smart Grid Customer Facing Solutions (CFS).

2.1 Bid Documentation Requirements

The Bidder, in addition to requirements defined in this Request for Proposal, shall include the following with its proposal:

- Financial Statements for the last three (3) years
- Dun & Bradstreet reporting number
- Standard Statement of Work used by Bidder for Specified Work in RFP
- Standard license agreement
- Standard support agreement

2.2 Confidentiality

This RFP has been prepared exclusively for The Companies and is proprietary in nature. The Companies reserve all copyrights for this document and its constituent parts and prohibits any unauthorized use or reproduction hereof. All or portions of this RFP and/or Appendices hereto may be designated or marked confidential ("Confidential Information"). Confidential Information shall not be disclosed to third-parties without The Companies prior written consent, except that the Bidder may disclose Confidential Information to the Bidder's consultants, affiliates, attorneys or potential subcontractors who need the Confidential Information for purposes of preparing a responsive proposal, and provided that each such recipient is advised of the confidentiality of the Confidential Information and is bound by agreement or otherwise to preserve the confidentiality of the same.

2.3 Intent to Submit Bid Form

Bidders who receive this RFP from The Companies and who plan to respond to it must complete the "Intent to Submit Bid Form," on or before 3:00 PM Hawaii Standard Time (HST) April 14, 2015. The form can be found in Appendix A.

Forms can be e-mailed to the location specified below. If assistance is needed, please contact Ms. Toni Mitobe-Shuster, Purchasing Contract Manager, via the e-mail address specified below. An electronic confirmation will be sent to the sender indicating the form was received. If the confirmation is not received, we encourage the Bidder to contact The Companies to verify

receipt of the Intent to Submit Bid Form. Intent forms received by The Companies after the Intent to Submit Bid due date may not be considered by The Companies.

Via E-mail:

SmartGridRFP@hawaiianelectric.com

2.4 Questions about the RFP

All inquiries or questions regarding this RFP shall be submitted via e-mail on or before 3:00 PM Hawaii Standard Time (HST) on April 20, 2015 via email to Ms. Toni Mitobe-Shuster, Purchasing Contract Manager, via the e-mail address specified below. Preliminary questions to be addressed during the Bidder's Conference shall be submitted via e-mail on or before 3:00 PM Hawaii Standard Time (HST) on Monday, April 9, 2015 to Ms. Toni Mitobe-Shuster, Purchasing Contract Manager, via the e-mail address specified below. The Companies shall have the sole option of determining whether a response to a question is necessary or appropriate under the circumstances. If The Companies elect to respond to a question, it shall have the further option of determining whether it shall respond solely to the Bidder raising the question or to all Bidders, based upon its assessment of the materiality of the question.

Via E-mail:

SmartGridRFP@hawaiianelectric.com

2.5 Proposal Due Date

Bidder proposals must be received by The Companies, on or before 3:00 PM HST on Friday, April 24, 2015 (the Proposal Due Date). The Companies, at its sole discretion, may cancel or postpone the Proposal Due Date at any time by providing notice to each Bidder, which notice shall be deemed an amendment to this RFP. Proposals received after this time will not be accepted by The Companies for consideration.

Completed proposals must be in PDF, MS Word, MS Project, and/or MS Excel – Office 2000 or later, only. No other formats will be accepted. The Bidder will provide one (1) electronic copy to the location specified on or before the Proposal Due Date and time for receipt of proposals.

The proposal constitutes an irrevocable offer to The Companies if not modified or withdrawn prior to the Proposal Due Date, and which cannot be withdrawn by the Bidder for a period of ninety (90) days following the Proposal Due Date.

Proposals are to be submitted in accordance with the following:

One (1) Electronic copy:

Emailed to Hawaiian Electric Purchasing (SmartGridRFP@hawaiianelectric.com) by deadline.

And, one (1) Hard copy:

Mailed to Hawaiian Electric Purchasing within four (4) business days of electronic deadline.

Hawaiian Electric Company
Attention: Toni Mitobe-Shuster, CP11-VP
900 Richards Street
Honolulu, HI 96813

The Bidder should zip the softcopy documents to a size of 25MB or less to ensure delivery through The Companies FTP/SharePoint solution.

Date and time of proposal receipt will be recorded by The Companies. The Companies' record of receipt will be deemed controlling in the event of any dispute whatsoever relating to the delivery of a proposal. Proposals that are delivered after the Proposal Due Date, or otherwise not in conformance with the requirements of this RFP, may be rejected at The Companies' sole discretion and without notice to the Bidder.

2.6 Specific Exceptions

The Contract Documents resulting from this RFP will incorporate provisions of this RFP including without limitation its Appendices and Attachments. It shall be assumed that the Bidder agrees to the provisions of said documents, including all terms and conditions of the Technology Consulting Master Services Agreement attached hereto as Appendix G (Technology Consulting Master Services Agreement), unless exceptions are specifically and clearly listed in its proposal.

All exceptions to the Contract Documents shall be briefly and clearly stated, listed together and specifically identified as exceptions in the proposal. Each exception shall be separately stated, shall identify the relevant section/subsection of this RFP or its attachments, shall identify the reason(s) for taking the exception, and shall propose a briefly and clearly stated alternative. Proposals that fail to do so may be considered non-responsive. The Bidder should not enclose a copy of its own standard terms and say "see enclosure" as this will be considered non-responsive. The Companies shall have the right in its sole judgment and discretion to reject any proposal or evaluate it unfavorably based on exceptions taken.

2.7 Bidder Proposal Format

The proposal must be complete and clear. Each question in the RFP should be answered with minimum reference to standard Bidder printed/promotional material. Technical data sheets or other literature may be attached to the proposal. Failure to comply with the prescribed format or failure to respond to all questions may disqualify the proposal. In order to expedite the

evaluation of proposals, it is mandatory the Bidder follow the instructions contained herein and use the following format for its proposal submissions:

Table 1 - Proposal Format

Proposal Section	RFP Section(s)	Attachment(s)
1. Cover Letter	5.1	
2. Executive Summary	5.2	
3. Potential Supplier company information	5.3	
4. Description, Scope, Methodology and Approach	5.4, 8, 9	In-scope/Out-of-scope Matrix Functional Requirements (App. C) General Technical and Cybersecurity Requirements (App. D)
5. Organizational Change Management & Training	5.5	
6. Project Management Approach	5.6	Project Schedule
7. Proposed Project Organization	5.7	Projection Organization Chart Roles/Responsibilities Matrix Detailed Cost and Staffing Model (App. E) Resumes
8. Proposed Pricing and Cost Summary	5.8, 10	Detailed Cost Estimate (App. E) Global Rate Schedule (App. E)
9. Supplier Capabilities and Experience	5.9	5-year Product Roadmap
10. Technology Consulting Master Services Agreement	5.10, 12.1	Technology Consulting Master Services Agreement
11. Listing of All Exceptions	5.13, 12.1	
12. Appendices	5.14	(all attachments above)

Bidders' response numbers must correspond to the question or item numbers in this RFP.

Bidders are required to prepare their response to this RFP according to these RFP Instructions and to the specific instructions to Bidders contained in each section of this RFP. Each Bidder shall be solely responsible for and shall bear all costs incurred in its preparation of its proposal and/or its participation in this RFP, including, but not limited to, all costs incurred with respect to the review of the RFP documents, site visits, third-party consultant consultation, and

investigation and internal communication with respect to matters pertaining to its proposal and this RFP, and the same shall not be reimbursed by The Companies to any Bidder, including the selected Bidder.

2.8 Completeness

The Bidder's proposal shall be complete, include all work that is indicated in this RFP, and also include all work that is normally considered part of the type of work covered by this RFP, whether or not such work is fully detailed or listed in this RFP.

Bidders are requested to submit proposals that are complete and unambiguous without the need for additional explanation or information. The Companies will make the final determination as to whether a proposal is acceptable or unacceptable solely on the basis of the proposal as submitted, and proceed with the proposal evaluation without requesting further information from any Bidder. If The Companies deem it otherwise desirable and in their best interest, then The Companies may, in their sole discretion, request from the Bidder additional information clarifying or supplementing, but not essentially modifying any proposal as submitted.

Proposals should be concise and factually supported. All questions should be answered, but the Bidder may indicate why certain questions are not relevant for its product or services. An unanswered question may be treated as an unsatisfactory response. Questions may be answered in whole or in part as appropriate by specific cross-reference to other answers in the proposal. Such cross-references should cite the exact section, page number, and/or paragraph number of the other answer or portion thereof. Imprecise or unclear references to other sections of the proposal, or references that do not specifically answer the question posed will be treated as an unsatisfactory response to the question. All questions must be followed immediately by its answer or reference.

Bidders must indicate which products and services requested in this RFP (including those in Appendices C and D) can or cannot be met by their product. Bidders must also review all terms set forth in this RFP (including all Appendices and Attachments) and indicate any exceptions. If the Bidder's proposal is accepted and the Bidder failed to propose any such product, term, or service, then the Bidder will be responsible for providing such product, term, or service at no additional cost to The Companies.

This RFP, the selected Bidder's proposal and all other material representations made by that Bidder in connection with its proposal likely will be written or incorporated into the Contract Documents between that Bidder and The Companies. Thus, by submitting a proposal, the Bidder understands and acknowledges that The Companies will rely on the proposal and all material representations made in selecting the Bidder and in entering into the Contract Documents, and the Bidder warrants that the statements made in the proposal and other material representations are truthful and accurate.

2.9 Additional Information

After the receipt of proposals, The Companies may request additional information to clarify the proposals via questions submitted to Bidders or in individual meetings with selected Bidders. Failure by a Bidder to provide the additional information or to participate in such requested meeting may be a cause for disqualification.

The Companies reserve the right to request proposal clarifications from only those Bidders that The Companies deem in their best interest. The Bidders shall have responsibility to document all clarifications as change pages to the proposal.

2.10 Evaluation of Proposals

Proposals will be considered in conjunction with information submitted by other Bidders as well as any additional information as The Companies, in their sole discretion, deem appropriate.

The evaluation of proposals will be based upon criteria that The Companies, in their sole judgment and discretion, believe to be in the best interest of The Companies and their customers. Bidders shall not be entitled to disclosure of The Companies' evaluation criteria or information pertaining to The Companies' actual evaluation and analysis of proposals.

The Companies shall have the right to reject any proposal, which The Companies, in their sole judgment and discretion, believe to be unsatisfactory or unresponsive, and may, as well, at any time up to the award of the Contract Document, withdraw this RFP and elect not to award the Contract Document.

Subject to the foregoing, and other factors in their best interest, The Companies will review, evaluate, and recommend selection of a winning proposal. In rendering this decision, the following evaluation criteria may be utilized as a general guideline:

- Proposed Smart Grid Customer Facing Solutions software, web portal, hardware and operating system functional fit, usability, customer engagement/focus, and completeness
- Proposed Smart Grid Customer Facing Solutions hardware and operating system technical fit and completeness
- Smart Grid Customer Facing Solutions Supplier Profile, Health and Experience
- Implementation approach, experience and proposed resources that will be assigned/dedicated to the Project
- Quality of implementation methodology and tools
- Adherence to Appendix G (Technology Consulting Master Services Agreement)
- Total Cost of Ownership of the proposed solution set

- Approach to Product Support and Upgrades (including 5-year Product Roadmap)
- Level of Risk and Uncertainty

Proposals will be evaluated as follows:

The Companies will review all submitted proposals and first determine if the submission complies with the above instructions and is complete. Those proposals that are accepted will be evaluated by The Companies' selection committee.

The Companies will make a final decision as to which Bidder(s) can provide, in the sole discretion of The Companies, including but not limited to, the best combination of technical and functional features, risk avoidance and cost.

2.11 Project Approach, Schedule and Organization

Bidders will be responsible for executing activities and tasks and providing deliverables in accordance with mutually agreed upon Contract Documents, which include the Statement of Work. See Appendix G for a sample Technology Consulting Master Services Agreement. The Companies' Smart Grid Enterprise project team will assist the Bidder as specified in the Contract Documents.

There may be two (2) on-site visits in which the Bidders will participate, depending on how far in the process they progress. The first visit will be for Short-listed Bidder On-site Presentations. The second visit (Preferred Suppliers On-site Key Personnel Visit) will occur once the Hawaii Public Utilities Commission Decision and Order (D&O) is approved and the final selection activities commence.

Short-listed Bidder On-site Presentations will be scheduled per the table in Section 2.16 Key RFP Dates.

For the CFS, the vendor scenarios for the demonstrations should be focused primarily around the ability of the customer to self-serve in a usable and engaging way. Vendors should demonstrate:

- Ability for a customer to register/sign-up for the portal
- Ability for a customer to view their interval usage (day/week/month/previous billing period)
- Ability for a Customer to view their bill
- Ability for a Customer to make an online payment
- Ability for a Customer to report an outage
- Ability for a Customer to request Move-In

- Ability for a Customer to request Move-Out
- Ability for a Customer to enroll in a program
- Ability for a Customer to manage contact preferences and to opt-in / opt-out of a program
- All of the above on a mobile device
- All of the above when the user is a CSR trying to help the customer
- Reporting/Dashboards
- Web administrator tools

A proposed agenda for the demonstration is shown below:

DAY 1	
Time	**Topic**
8:00 AM	Introductions
8:15 AM	Company Overview
8:30 AM	Product Overview and Strategy
9:30 AM	Functional Requirements Fit
12:00 PM	Lunch
1:00 – 4:00PM	Scenarios from The Companies (Section 2.11)
	Additional Product Demonstration
	Free form Question and Answer with product demonstrations
5:00 PM	Close
DAY 2	
Time	**Topic**
8:00-12:00	Technical and Cybersecurity Requirements Fit
	Application Architecture
	Data Architecture
	Integration Architecture
	Infrastructure Architecture
	Security Architecture

12:00	Close

2.12 Right to Reject

The Companies reserve the right, at their sole discretion, to reject any or all proposals received, and to waive irregularities contained therein.

Each Bidder must agree that such rejection shall be without liability on the part of The Companies for any damage or claim brought by any Bidder because of such rejections, and the Bidder shall not seek recourse of any kind against The Companies because of such rejections. The filing of any proposal in response to this Request for Proposal shall constitute an agreement of the Bidder to these conditions.

2.13 Bid Validity Period

All pricing Bids submitted shall be effective and relied upon by The Companies for an eighteen (18) month period. See Section 2.16 - Key Project Dates, for the proposed timeline. Additionally, the approved key resources listed in the proposal will be available for sixty (60) days following the Proposal Due Date. If any of the key resources need to be replaced, The Companies and the Bidder will mutually agree to the new resource(s).

2.14 Award

The Companies shall have the right to award the contract to the Bidder(s) that, in The Companies' sole judgment and discretion, and in addition to the considerations stated in paragraph 2.10 above, has provided a proposal that is in the best interests and has the best value to The Companies and their customers. The selected Bidder(s) shall then be referred to as "Selected Supplier(s)".

The Companies shall have the right to award the contract to other than the lowest priced bidder.

The Companies shall have the right to determine not to award the contract, or to re-bid, restate, revise or cancel this RFP or any project related to the RFP.

The award, if any, will be announced in writing to the Selected Supplier, and The Companies shall provide notice to all other Bidders that their offers have not been accepted.

The Companies shall not be required to explain its selection of the Selected Supplier to any Bidder or explain to any Bidder why its proposal was not selected.

The Selected Supplier may additionally be notified of its selection by The Companies by phone, electronic mail or other means.

The selection is provisional until execution of the Contract Documents by The Companies and the Selected Supplier. Until such time, The Companies may revoke or change its selection for any reason, including but not limited to failure of The Companies and the Selected Supplier to agree on final terms for the Contract Documents.

No Bidder shall have the right to protest or appeal the award of the Contract made by The Companies.

2.15 Terminology

Appendix B attached hereto and incorporated herein is a glossary of terms and acronyms that apply to this RFP.

2.16 Key RFP Dates

The following are projected key dates for this RFP.

Table 2 - Key RFP Dates

Schedule of Events	Due Date	Time
Questions for Bidders Conference	April 9, 2015	3:00 pm HST
Bidders Conference	April 13, 2015	TBD
Intent to Submit Bid Form	April 14, 2015	3:00 pm HST
Deadline for RFP Questions	April 20, 2015	3:00 pm HST
Proposal Due Date	April 24, 2015	3:00 pm HST
Short-Listed Vendor Presentations	June 8-16, 2015	TBD
Conditional Award (pending positive PUC Decision and Order (D&O)	June 23, 2015	TBD

2.17 Modification of Proposal

A proposal may be modified at any time prior to the Proposal Due Date.

In order to modify its proposal, the Bidder must submit a revised proposal, clearly identified as such, which expressly supersedes and replaces the earlier proposal from the Bidder. The revised proposal must identify the date of the earlier proposal which it is superseding and replacing.

Revised proposals are subject to all requirements of this RFP, shall not incorporate or rely upon the proposal that it is superseding and replacing and must be delivered to or received by The Companies on or before the Proposal Due Date.

A proposal may not be modified or revised after the Proposal Due Date, unless explicitly amended during the course of the on-site visit and subsequent negotiations, as documented and approved by The Companies and the Bidder.

2.18 Withdrawal of Proposals

A proposal may be withdrawn at any time prior to the Proposal Due Date.

A proposal will be deemed withdrawn upon receipt by The Companies of a Withdrawal of Proposal notice at the office identified in Section 2.5, above, on or before the Proposal Due Date.

Proposals that have been withdrawn pursuant to this section will not be considered by The Companies and may be discarded by The Companies.

Proposals may not be withdrawn after the Proposal Due Date for any reason, including, but not limited to, errors or mistakes, for a period of ninety (90) days following the Proposal Due Date.

3 Project Description

Information provided in this section, while preliminary, general and subject to change, is intended to assist the Bidder to understand the general functionality required of the solution being considered as part of this Project. The Companies intend to implement the selected hardware and operating system as supplied by the Bidder with a minimum amount of customization beyond normal configuration, unless required to meet The Companies' operational needs.

3.1 Hawaiian Electric Company

The Hawaiian Electric Company, Inc. is a wholly owned subsidiary of Hawaiian Electric Industries, Inc., which is a publicly owned corporation. The Hawaiian Electric Company, Inc. (Hawaiian Electric) has two subsidiaries, Maui Electric Company, Ltd. (Maui Electric), and Hawai'i Electric Light Company, Inc. (Hawai'i Electric Light)

The Hawaiian Electric Company, Inc., Maui Electric Company, Ltd., and Hawai'i Electric Light Company, Inc. are collectively referred to for purposes in this document as "The Companies".

Additional information can be found at www.hawaiianelectric.com or will be made available upon request.

3.2 Smart Grid Initiative Background

At the request of the Hawaii Public Utilities Commission (Commission), The Companies have developed a comprehensive roadmap and business case for the implementation of a Smart Grid infrastructure. The Companies based the roadmap and business case on a comprehensive review of other smart grid implementations and on carefully specified fundamental assumptions, documented in The Companies' Smart Grid Roadmap and Business Case (http://www.solari.net/documents/portfolio/Solari-Smart-Grid-Roadmap-&-Business-Case.pdf).

The Companies propose to implement smart grid through all three of our operating utilities, on all five islands served. Smart grid modernizes the electric grids, enables more renewable energy, reduces outage times, increases the efficiencies of our operation, reduces costs, and, most importantly, delivers tangible benefits to our customers.

Our overarching goal is to efficiently and cost-effectively implement a smart grid that brings the greatest benefit to our customers. Smart grid brings enormous changes for The Companies, for our customers, and for the state of Hawaii. Our plans reflect our understanding of the complexity of this undertaking.

The foundation of The Companies' smart grid platform is a two-way communications network that connects points along the distribution grid to its back-office software. Smart grid

applications run on that network providing detailed information about the performance of the distribution grid. The primary applications The Companies are implementing are:

1. The Advanced Metering Infrastructure (AMI) application supports the installation of smart meters and other smart grid devices in residential and commercial sites. AMI automates many current manual processes, such as meter reading, customer billing, and service connects and disconnects.
2. The Volt/VAR Optimization (VVO) application, by accessing voltage data collected by AMI, enables our operators to safely and more precisely control voltages which results in saved energy, less carbon dioxide emissions, and lower customer bills. VVO increases efficiency.
3. The Advanced Distribution Management System (ADMS) application provides a centralized platform for operators to leverage multiple smart grid systems and capabilities including advanced metering infrastructure (AMI), VOLT/VAR optimization (VVO), distribution automation (DA), and demand response (DR). The ADMS will help to facilitate the integration of distributed energy resources (DER), improve operational efficiencies, increase the reliability of the distribution network, and reduce costs.
4. The Pre-Payment System allows The Companies to utilize the AMI infrastructure to phase in payment options for customers, allowing customers the flexibility to pay for electricity before they use it while avoiding the need for a deposit.
5. Customer Facing Solutions allows customers to access their private, personal energy consumption. They can view detailed information about their energy usage, estimate their monthly usage, and receive tips for decreasing their energy consumption. They can also access additional features such as the Pre-Payment system.

The Companies anticipate installing 500,000 Smart Meters across the islands per the following approximate schedule:

Quantities	500,000 smart meters (300,000 Oahu, 100,000 (Maui, Molokai, Lanai), 100,000 Big Island
Meter installation schedule	Oahu 2016-2018, Maui 2016-2017, Molokai 2016, Lanai 2016, Big Island 2016-2017

The Companies are interested in providing their Customers with the best possible user experience as a critical component of the Smart Grid initiative and have identified the need for Customer Facing Solutions (CFS) to provide the following representative high-level functions to The Companies. Individual requirements are documented in Appendix C: Functional Requirements.

1. Guest Access: The functionality that is available to a web user without user authentication
2. Registration: The capability for a user to initially register for an Online Account
3. Authentication: The ability for a user to securely log-in to their Online Account
4. Online Account Landing Page: The initial content and functionality available to the user once they have authenticated

5. Preferences: The capabilities for the user to establish account preferences for access, notifications, profile information, etc.
    a. Access Preferences
    b. Profile Preferences
    c. Alert Preferences
    d. TCPA Preferences
6. Alerts and Event Notifications: The ability to display alerts and event notifications on the Online Account.
7. Resolve Account: The ability to traverse the Account structure to resolve to a single Contract Account and/or Service Contract in order to view associated detailed data. The Online Account is established at the Contract Account Level, but a given user can have multiple Contract Accounts hooked to their userid. Also, a specific Contract Account can include multiple Service Contracts. Depending on the information the user wants to see, it may be necessary to resolve to a single Contract Account and Service Contract.
8. Account Display: This section describes what the user will see once they have authenticated and resolved to a specific contract account/service contract.
9. Usage General: The ability for the user to access online views of usage and interval data for residential, small business, or large commercial customers based on the rates and programs offered by The Companies now and in the future.
    a. Usage - Compare Rates
    b. Usage - Tiered
    c. Usage - TOU
    d. Usage - Demand
    e. Usage - NEM
10. Billing and Payment: The ability for the user to access views related to online billing and payment
    a. Bill/Pay Display
    b. Online Payment Prohibited
    c. Auto Bill Pay
    d. 1-Time Bill Pay
    e. Pre-Payments
    f. Rolling Credits
11. Service Requests: The ability for the user to interact with the system to request various types of products/services from The Companies, such as move-in, move-out, etc.
12. Program Enrollment: The ability for the user to enroll in various programs and services offered by The Companies
13. Outage Center: The ability for the user to interact with the system to get more information on current and planned outages, to report an outage, etc.

14. Green Button: The ability for the authenticated user to download interval data via the "Green Button" once they have enrolled in the service
15. Mobile Devices: The ability for a mobile user to access features of the CFS on their device.
16. Reporting and Analytics: The capability to deliver reports that the system will generate on a regular or ad-hoc basis, as requested by an authorized web administrator.
17. Design Approach: The solution shall conform to the basic design principles found in Appendix C: Functional Requirements
18. Accessibility: The solution shall be WCAG Compliant
19. Customer Focused: The solution shall deliver a highly usable and engaging user experience for the Customer

3.3 Scope of the Customer Facing Solutions Project

The Bidder will supply a Customer Facing Solutions ("CFS") solution that includes the CFS software licenses, annual maintenance and support, and associated services to support the CFS's implementation and transition to operations. In addition to the licensed software components, the Bidder will design, configure, install, integrate, build, test, implement and provide post-go-live support for the CFS.

3.3.1 CFS Software and License:

Provide the software and license(s) and any associated maintenance agreement for the CFS. The license(s) should allow for multiple instances of the CFS – in development, testing, production, maintenance and training environments, and any second site backup location.

3.3.2 CFS Interface Adaptors and License:

Provide the software and license(s) for any CFS to Enterprise Service Bus (ESB) Interface Adapters software available to support CFS integration. The proposed solution must integrate with the Silver Springs Network (SSN) AMI network and the Customer Information System (CIS) SAP Customer Service System and provide a platform for delivering meter data to other applications such as the Volt/VAR Optimization (VVO) application, the Distribution Automation (DA) application, the Pre-Payment System and Customer Facing Solutions. The license(s) should allow for multiple instances of the license(s) – in development, testing, production, maintenance and training environments, and any second site backup location. This includes any software in addition to the core adaptors required to support deployment, configuration and testing.

3.3.3 Services:

3.3.3.1 The Bidder shall provide the appropriately skilled and experienced resources, with supporting methodology and tools, to gather requirements and provide a detailed architecture and design of the CFS and its integration with The Companies' other

systems working within The Companies' ITS applications architecture framework. The Bidder will develop a set of approved test cases and scripts with The Companies.

3.3.3.2 The Bidder shall provide the resources to install, configure, and build the CFS and its integrations as per the detailed design.

3.3.3.3 The Bidder shall provide the resources, tools and methodology to test all functionality implemented by the Bidder in accordance with the test cases and scripts developed and signed off as part of the design process. The Bidder shall perform functional, performance, stress, integration, system, and security and privacy testing of the CFS and its integrations with The Companies' other systems. The Bidder will document all tests performed and results achieved and include them as part of the testing deliverables. The Bidder will be responsible for data prep in support of all phases of testing including User Acceptance Testing. The Bidder will additionally provide support to The Companies during User Acceptance Testing.

3.3.3.4 The Bidder shall provide expertise in CFS user and system administration training covering all features of the CFS product, including recommending and assisting in the delivery of an overall training program for end users and administrators. This will include:

3.3.3.4.1 Assessment of The Companies training needs as reviewed and approved by The Companies;

3.3.3.4.2 Development of a proposed training plan;

3.3.3.4.3 Development of training materials; and

3.3.3.4.4 Delivery of training based on assessment of needs (e.g. classroom, train the trainer, in the field, on-line).

3.3.4 Product and Services Alternative:

If the Bidder offers it, The Companies are interested in an alternate proposal to provide an on- or off-premise hosted solution. This proposal should be included in addition to the "purchase" option.

3.3.5 Documentation

3.3.5.1 Product documentation: The Bidder will deliver all manuals and documentation relating to the CFS product and other software products provided as part of the solution. This would include, but not necessarily be limited to:

3.3.5.1.1 User product manuals

3.3.5.1.2 System administrator product manuals

3.3.5.2 Training documentation: The Bidder will provide all documentation relating to the training scope of work. The Bidder will produce and provide:

3.3.5.2.1 Training assessment document

3.3.5.2.2 User training documentation handout and course material

3.3.5.2.3 System administrator training handout and course material

3.3.5.3 Process documentation: The Bidder will deliver all documentation relating to the services supplied and the process surrounding the CFS software and any ESB integration. This would include but not necessarily be limited to:

3.3.5.3.1 CFS and data storage requirements and detailed design documentation

3.3.5.3.2 CFS and data storage installation and configuration documentation

3.3.5.3.3 CFS ESB integration requirements and detailed design documentation

3.3.5.3.4 CFS ESB Installation and configuration documentation

3.3.5.3.5 Functional, performance, security and integration test cases

3.3.5.3.6 Results from functional, performance, security and integration testing

3.3.5.4 Marketing documentation: The Bidder will share marketing creative (irrespective of type of media (print, digital, screen shots etc.) relating to the CFS product and other software products provided as part of the solution upon request where The Companies have determined such creative will assist in their Customer Engagement efforts.

The Companies will procure and provision all hardware required to support the Project.

3.4 IT Standards and Requirements

The Bidder should familiarize themselves with The Companies' General Technical and Cybersecurity requirements as identified in the Appendix D and provide adequate information in response to each requirement in order to reflect the Bidder's compliance.

3.5 Project Management Requirements

The Companies require that the Bidder will assume the prime contractor role and assume responsibility for project management and performance of each subcontractor.

The Companies require that this Project be managed utilizing rigorous complex level project management standards as defined by The Companies' Enterprise Project Management Office (EPMO). The EPMO conforms to the Project Management Institute's (PMI) standards for project management as documented in The Companies' Project Management Book of Knowledge (PMBOK) and contained in the EPMO's Project Management Resource Center.

3.5.1 EPMO Project Management Standards

It is expected that the Bidder will conform to the EPMO standards and recommend changes that will benefit a project of this scope and size, as needed.

See Appendix F – EPMO Standards and Sample Templates for details.

3.5.2 Earned Value Management (EVM)

The Companies require EVM tracking and reporting on this Project. The Bidder will manage and maintain the master project schedule which will include all resources working on the Project (i.e. The Companies, Bidder, and all subcontractors of The Companies and of the Bidder).

3.5.3 Change Control

The Bidder is expected to provide and employ a standardized change control procedure and methodology across all Project phases. This includes a detailed description of all required steps to submit, review and approve/reject change requests, as well as guidelines to be followed by the steering committee for any escalation or dispute resolution. The Bidder must utilize the change control processes and workflow tools that are currently available in the Appendix. Summarized below are examples of the change control processes that the Bidder will be responsible for managing in collaboration with The Companies.

3.5.3.1 Project Change Control

Process utilized to manage all material changes (scope, timeline, resources or cost) which impact the Project. The process is performed when the Project Team is aware of a change to the then approved Project Schedule Baseline and/or associated documents.

3.5.3.2 Scope Change Control

Process utilized to perform the day to day management of scope changes that will be requested by the Project Team, stakeholders and/or end-users including:

1) Process – Addition or reduction of business processes included

2) Deliverable – Addition or removal of deliverables as requested

3) Function – Addition or removal of functions

4) Resource – Addition or removal of resources

3.5.3.3 Contractual Change Control

Process utilized to request the significant removal, addition or change to any major item not explicitly defined or covered within the original contract or SOW (Statement of Work). This process is normally executed for items that could not be resolved or have to be escalated from the scope change control procedure.

3.5.4 Quality Assurance Expectations

In general, The Companies will be engaging external parties to perform three (3) types of quality assurance activities on this Project. The Bidder is expected to collaboratively work with these external parties in order to ensure a successful implementation. Additionally, stage gate

deliverables of the Bidder will be directly related to meeting the expected quality assurance targets that are set and mutually agreed to at the start of the Project.

3.5.4.1 Systems Integrator Safe Guarding

The Companies may be employing third-party Systems Integrator (SI) to perform safeguarding throughout the Project's lifecycle. The SI safeguarding services for implementation may include planning, feasibility, technical integration, operations competence and go-live checks. This is to ensure that the implementation results in a quality delivery both from a technical and functional business perspective. It is expected that the Bidder collaborate and work with SI personnel when needed as outlined by the safe guarding process.

3.5.4.2 Project Management Quality Assurance

The Companies will be employing personnel either directly from the EPMO or externally contracted by the EPMO in order to conduct quality assurance activities on the Project for ensuring the appropriate level of project management rigor. This will include but is not limited to review of the Project's charter, integrated project management plan, schedule, budget, risk and issues log, reporting, change control procedures and log, project management information system, and earned value management tracking. It is expected that the Bidder collaborate and work with the EPMO personnel/contractor in order to complete this process.

3.5.4.3 SOX Controls Implementation Audit

The Companies will be employing a third-party vendor to conduct SOX control evaluations and audits in order to ensure that the Project will conform to The Companies' required SOX compliance. It is expected that the Bidder will collaborate and work with the third-party vendor in order to complete this process.

4 General Responsibilities of the Selected Supplier

This section describes the general project responsibilities, project management procedures, project documents, installation, and usability of the Selected Suppliers' solution. This section may be replaced either in part or in its entirety during the contract negotiation period pursuant to a detailed Statement of Work and other Contract Documents.

The general responsibilities of The Companies and the Selected Supplier are presented below. These general responsibilities are in addition to responsibilities specified in other sections of this RFP.

4.1 The Selected Supplier's Responsibilities

The Selected Supplier is required to address the following:

4.1.1 The proposed architecture options for the Selected Supplier's solution set(s), to include considerations and recommendations for virtualization, disaster recovery, high availability and infrastructure management.

4.1.2 The Selected Supplier must have conformed to the Proposal Submission Requirements defined in Section 5.

4.1.3 Short-listed Selected Suppliers must demonstrate the product's capabilities and usability to The Companies for final assessment.

4.2 The Companies' Responsibilities

The Companies will be responsible for the following:

4.2.1 Review the Selected Supplier's RFP responses to ensure inclusion of all required items and specifications.

4.2.2 Provide resources required to evaluate the Selected Supplier's proposed solution set based on specifications provided by the Selected Supplier**.**

4.2.3 The Companies or their designated representatives will manage and maintain the master project schedule which will include all resources working on the Project (i.e. The Companies, Selected Supplier, and all subcontractors of The Companies and of the Selected Supplier).

5 Proposal Submission Requirements

The sections that follow describe the proposal elements that will be required in order for the Bidder's proposal to be considered. Each section contains guidance as to the content and format (as applicable) expected by The Companies.

5.1 Cover letter

Provide a cover letter which contains the following mandatory information:

1. A description of the Bidder's understanding of the scope and solution to be provided;
2. The full name of the Bidder's organization;
3. The name, title, telephone number, fax number, and email address of the person to be contacted regarding the content of the proposal;
4. The name, title, telephone number, fax number, and email address of the person authorized to commit the Bidder in a contractual agreement, if different from that indicated above;
5. The complete address of the Bidder's organization including branch offices and/or divisions that will assist in performing the contracted services;
6. Explicit acknowledgement of the Bidder's review and acceptance of the Terms and Conditions of the RFP identifying any exceptions taken with specific items;
7. A statement that the proposal meets the specifications of each subsection of the RFP;
8. The validity period of the offer;
9. The signature of an authorized representative of the Bidder's organization.

5.2 Executive Summary

Include an executive summary which briefly and concisely conveys what the Bidder sees as the most important messages of the proposal, the factors of differentiation, and the critical points that The Companies should consider in its evaluation. Please explain how the Bidder's strategic direction will benefit The Companies from an immediate and long-term perspective. The format of this item is at the discretion of the Bidder but should include an overview of the Bidder's understanding of the proposal requirements, the Bidder's response to the requirements, and the Bidder's experience with projects of this nature.

5.3 Bidder Company Information

5.3.1 Company Overview:

Provide a brief overview and history of the Bidder including the following:

5.3.1.1 Company mission statement

5.3.1.2 Organizational chart which provides an overview of the company structure (business unit and industry alignment, if applicable) to include the names and titles of the corresponding executives

5.3.1.3 A brief description of The Bidder's core portfolio service offerings that align with The Companies' immediate and longer-term objectives

5.3.1.4 Financial viability, include audited financial statements for the past three (3) years

5.3.1.5 A summary of any pending litigation(s)

5.3.2 Alliances, Partnerships and Certifications

Identify any relevant alliances, partnerships or affiliations with other third-party organizations. Describe any certifications awarded to the company by any third-party organizations. Indicate how these will benefit The Companies.

5.3.3 Product and Practice Overview

5.3.3.1 State how long the Bidder's CFS has been commercially available.

5.3.3.2 State the current version of the Bidder's CFS, how long that version has been commercially available, and how many instances are currently operating in production.

5.3.3.3 Provide the name and title of the CFS Product Development business lead and the length of time that individual has been with the Bidder's company.

5.3.3.4 State the number of currently active utilities using the CFS and the total number of completed implementation engagements, broken down by the proposed version and previous versions still supported.

5.3.3.5 Describe how the Bidder's commitment to Customer Focus is actualized in the proposed CFS solution

5.3.3.6 Provide the Bidder's overall client retention rate across the company for the past three (3) years. Provide the Bidder's client retention rate for the CFS product for the past three (3) years, broken down by the proposed version and previous versions still supported.

5.3.3.7 Provide a revenue breakout with geographic segmentation for the proposed CFS product for the past three (3) years. At a minimum, include as part of the response,

total Customer Facing Solutions product revenues ($U.S.) for each year, and the Customer Facing Solutions product revenues ($U.S.) and percentage of revenues associated with implementation services.

5.3.3.8 Identify the total number of members within the CFS business line. At a minimum, include as part of the response, a matrix providing the following information which should also include identification of relevant Electric Utility industry experience, years with the Bidder's company and current availability.

1. Total resources within the practice
    - Number of resources with 0-3 years of experience
    - Number of resources with 4-7 years of experience
    - Number of resources with > 8 years of experience
2. Number of functional resources within the practice
    - Number of functional resources with 0-3 years of experience
    - Number of functional resources with 4-7 years of experience
    - Number of functional resources with > 8 years of experience
3. Number of technical resources within the practice
    - Number of technical resources with 0-3 years of experience
    - Number of technical resources with 4-7 years of experience
    - Number of technical resources with > 8 years of experience
4. Geographical distribution of resources within the business
5. Number of each type of CFS staff/consultant within the business
6. Identify the CFS modules and technology experience of the Bidder's staff/consultants. Include the number and percentage of staff/consultants with respect to such experience.
7. Number and percentage of staff/consultants in the Bidder's practice that are trained and experienced on the following software packages:
    - IBM WebSphere ESB
    - Other software products as proposed

a. Identify the attrition rate within the Bidder's CFS business for the past three (3) years and the most current quarter.

b. Identify the Bidder's utilization rate within the CFS business, including and excluding resources in training.

5.3.4 Future Technology Strategy and Plan

In all cases, the Bidder shall make a clear distinction between requirements which are met using existing system functionality and requirements which can be met only through additional development activity. This distinction is required whenever requirements are not met by the version of the Bidder's products which is currently available for general release. However, The Companies are very interested in the Bidder's future technology roadmap and plans.

5.3.4.1 Describe the future strategy, roadmap and vision of the Bidder as it relates to the proposed system(s).

5.3.4.2 What enhancements to the Bidder's proposed system(s) software will be included in new versions during the next five (5) years? Please provide a 5-year product roadmap.

5.3.4.3 Describe how customer requests and regulatory enhancements are incorporated into the product roadmap.

5.3.4.4 Does the Bidder have a customer advisory process, and what recommendation(s) from these advisory groups have been implemented recently?

5.3.4.5 Please provide The Companies with prior history as to how strategic direction has actually been implemented for the proposed system(s) – or other products within the product line.

5.3.5 Prior and Current Engagements with The Companies

If applicable, identify and describe any prior and/or current engagements that the Bidder has had with any business entities of The Companies. Identify the points of contact within The Companies with whom the Bidder had the relationship.

By responding to this RFP, The Companies will not be precluded from engaging Bidders in other work that is outside the scope of the Customer Facing Solutions project.

5.4 Implementation Methodology, Scope and Approach

5.4.1 Description and Scope

5.4.1.1 Include a general description of the Bidder's CFS offering. Identify key off-the-shelf features/modules and how these compare to offerings from other Bidders.

5.4.1.2 Provide a summary of the proposed scope of the Project. For key gaps that may exist between the Bidder's current capabilities and the proposed project scope, identify the

proposed strategies for addressing those gaps (e.g., customization, third-party products, etc.).

5.4.2 Methodology and Approach

5.4.2.1 Describe the Bidder's service delivery methodology and approach for performing the services requested within this RFP.

5.4.2.2 Include a description of each of the key phases for assuming responsibility of the services requested based upon the requirements of this RFP.

5.4.2.3 Include a proposed integrated project plan and schedule for the services requested in this RFP as an attached appendix to the proposal.

5.4.3 In-scope and Out-of-scope

Based on the information provided by The Companies in this RFP, identify all of the elements the Bidder considers in-scope and out-of-scope for this Project. Include a matrix of what is considered in-scope and out-of-scope as an appendix to the proposal.

5.4.4 Proposed Timeline, Key Milestones and Deliverables

5.4.4.1 Identify the proposed timeline, key milestones, and major deliverables associated with providing the consulting and implementation services, assuming a Project start date of June 1, 2016 and a proposed completion date at least two (2) months prior to the overall Smart Grid project proposed go-live date.

5.4.4.2 Include a full description of the deliverables, as well as identify the party responsible for completion of each deliverable (i.e. primary responsible).

5.4.4.3 Provide the requested baseline deployment and duration timeline indicated below. Please indicate associated pros and cons for the scenario.

Baseline deployment:

> System implementation in which functionality is staged across phases – targeting base capability first, followed by incremental phased capabilities based on need, risk and maturity. For example, Phase 1 – Base portal infrastructure (e.g. SSO) and Energy Portal, Phase 2 – Pre-Payment and other minor value add services, Phase 3 – Existing Portal (i.e. SAP UCES) conversion. It may also be possible to further phase functions by company as well.

5.4.4.4 Provide alternative timeline and schedule phasing of functionality based on Bidder experience.

5.4.4.5 Timelines and schedules must be delivered in Microsoft Project 2010. Additional formats for presentation purposes will also be accepted, in accordance with the types listed in Section 2.5.

5.4.5 Acceptance Process

5.4.5.1 The Bidder shall propose the acceptance process and general acceptance criteria The Companies will utilize to measure the quality of deliverables and achievement of milestones.

5.4.5.2 The Bidder shall provide an acknowledgement that its performance will be measured based on The Companies' acceptance of deliverables.

5.4.6 Offshore Capabilities

5.4.6.1 Identify the Bidder's specific capabilities with respect to leveraging low cost offshore resources experienced in CFS implementations. Indicate whether the recommended offshore solution would be based upon in-house capabilities or via a third party alliance or partnership.

5.4.6.2 Identify the specific phases, level of effort, and geographic reach where offshore resources can be utilized. Quantify the potential cost savings associated with the recommendation. Provide examples of specific offshore CFS implementation experience within the Electric Utility industry.

5.4.6.3 Indicate how the Bidder will effectively coordinate efforts while maintaining quality of deliverables when engaging and managing offshore resources.

5.4.6.4 Identify the attrition rates for the past three (3) years for the Bidder's various offshore locations and identify the project management approach to maintaining continuity of personnel.

5.4.7 Reuse Knowledge

Describe the Bidder's ability to leverage its internal knowledge base and reuse knowledge capital from prior engagements of a similar nature.

5.4.8 Project Tools and Templates

Based on the Technical Requirements indicated by The Companies, outline the Bidder's experience and capabilities in using the following:

5.4.8.1 Microsoft SharePoint

5.4.8.2 Microsoft Project

Identify all additional tools and templates the Bidder proposes to utilize for reporting, collaboration, performance dashboards, etc. Include best practice templates and accelerators that demonstrate the ability to be innovative, productive and efficient while understanding how to work with The Companies' business culture.

For these additional tools identified, provide an acknowledgement that The Companies will have a perpetual worldwide royalty-free license to use such tools during and upon expiration/termination of the Contract Documents. Please clearly identify any existing and/or on-going licensing, support or maintenance fees.

5.4.9 Internal Knowledge Transfer and Transition

5.4.9.1 Describe the Bidder's approach to internal knowledge transfer and transition management.

5.4.9.2 Describe the Bidder's commitment to maintaining staff/consultant continuity for the duration of the Project. In the event of unplanned turnover, describe the process for managing turnover.

5.4.10 Data Standardization, Cleansing, Conversion, Migration, and Validation

Describe the Bidder's data standardization, cleansing, conversion, migration, and validation approach. Include a description of the methodology and automated tools and techniques for cleansing, conversion, migrating, validating, and maintaining data integrity.

5.4.11 Testing Methodology

5.4.11.1 Describe the Bidder's testing methodology and activities that will be performed.

5.4.11.2 Describe each type of test that will be performed during the course of the Project. Include a description of the key goals, metrics and criteria to be accomplished for each type of test.

5.4.11.3 Provide sample documents for integration test plans, test scenarios/scripts, test cases and test data.

5.4.11.4 Describe the use of the non-production and production environments for testing and how these will be refreshed and managed.

5.4.12 Operational Readiness and Full Dress Rehearsals

Describe the Bidder's approach to operational readiness, how to determine go/no-go criteria, and how full dress rehearsals are performed.

5.4.13 Operational Process Baseline – Pre versus Post Go-Live

Describe which high impact end user processes the Bidder would propose to the baseline and why. Describe the associated metrics and how they will be captured and reported.

5.4.14 Post-Go-Live Support

Describe the Bidder's post go-live support for three (3) to six (6) months following the implementation and identify any associated cost. Detail the expected activities the Bidder will be responsible for.

5.5 Organizational Change Management

5.5.1 Organizational Change Management

5.5.1.1 Describe the Bidder's recommended change management approach for the Project and what materials and experience from prior customer engagements will assist in planning and executing successful OCM activities.

5.5.1.2 Identify the Bidder's change management philosophy, methodology, management framework, and deliverables necessary for organizational change.

5.5.1.3 Describe the Bidder's approach to supporting The Companies' external change management Customer Engagement activities in the areas of communications and consumer adoption of Smart Grid.

5.5.2 Training

5.5.2.1 Training Sessions – Describe the training sessions, duration, and proposed attendees from The Companies for the types of training listed below:

- Functional support training
- Technical support training
- Train the trainer training
- End User training

5.5.2.2 Training Skills And Experience - Describe the skills and experience of the Bidder in terms of the type of training and coaching services provided.

5.5.2.3 Training Methodology - Describe the training methodology, curriculum design, and requirements for training data and training materials.

5.5.2.4 Training Strategy / Timing - Provide a strategy and timing for training of the Project Team, end-users, help-desk personnel and other on-going support personnel (reporting analysts, super-users, etc.). Strategy should address:

- Approach to development & delivery of training to different target groups
- Planned high level training scope

- Delivery mechanisms
- Approach to identifying trainers
- Define training program development process
- Target level of training
- Approach to competency assessment
- Training schedule, along with required training resources, that delivers training at least two (2) months prior to the CFS go-live date.

5.5.2.5 Training Material - Training material must be available in time for delivery and review by The Companies personnel prior to the training sessions and encompass:

- Baseline technical, functional, and operational training documentation and course materials
- Business Processes and Procedures
- Manuals, quick reference cards for key transactional and process quick reference, etc.
- Material for courses within an approved catalogue

5.5.2.6 Customization - Describe the Bidder's ability to tailor instruction and materials to the specific needs of The Companies. Provide a sample of the type of training material that would be provided.

5.5.2.7 Training Activities - Describe activities associated with training including loading of data, creation of a test environment, train the trainer sessions, etc.

5.5.2.8 Incorporation of Business Process Design into Training - Describe how process steps, flow diagrams, and system transactions will be documented and analyzed to facilitate testing and training. Include a description of business process design sessions to determine process configuration requirements and the system's impacts on business processes.

5.5.2.9 Approach to Training - Describe the Bidder's approach to training. Please propose both options:

Option 1: Bidder shall conduct an initial training and education program which includes all primary, secondary, and casual users.

Option 2: Bidder shall train The Companies' trainers, who will then perform the training and education of the primary, secondary, and casual users.

5.5.3 Approach for Development of Training Materials

Describe the Bidder's approach for development of training materials. Please propose both options:

Option 1: Bidder to develop The Companies' specific training materials.

Option 2: Bidder shall oversee and review the development of The Companies' specific training materials by The Companies' resources.

5.6 Project Management Approach

5.6.1 Project Management Methodology

5.6.1.1 Describe the Bidder's approach to managing this Project. Include insight into the capability to manage this Project, respond to day-to-day problems, manage issues and staff, and supervise and manage resources.

5.6.1.2 Describe and provide examples of past project charters used for alignment between the project managers and their executive stakeholders jointly across The Companies and the Bidder. Describe the Bidder's approach for team building and maintaining team focus for long term projects.

5.6.1.3 Describe the Bidder's process controls to be put in place to ensure the work required throughout this engagement is performed to the highest levels.

5.6.1.4 Acknowledge that the Bidder will conform to the EPMO standards and recommend changes that will benefit a project of this scope and size, as needed.

5.6.1.5 Interface with and provide assistance to The Companies staff and its third-party Quality Assurance auditors in order to conduct quality assurance activities on the Project for ensuring the appropriate level of project management rigor.

5.6.1.6 Interface with and provide assistance to The Companies staff and its third-party Systems Integrator (SI) to perform safeguarding throughout the Project's lifecycle to ensure that the implementation results in a quality delivery both from a technical and functional business perspective.

5.6.2 Integrated Project Management Plan

5.6.2.1 Describe and provide examples of the Bidder's standard Integrated Project Management Plan.

5.6.2.2 Describe how the plan is maintained and used to control the Project.

5.6.2.3 Provide examples of a similar project schedule. Ensure that it demonstrates full critical path tracking (no orphan tasks), resource leveling, and baseline controls.

5.6.3 Project Status, Metrics and Reporting

The Companies require EVM tracking and reporting on this Project.

5.6.3.1 The Bidder will manage and maintain the Bidder's project schedule which will include all resources working for the Bidder. The Bidder shall provide regular periodic (at least weekly) updates to The Companies for the master schedule. The Bidder shall provide ad-hoc updates upon request by The Companies.

5.6.3.2 The Bidder is required to comply with Earned Value Management (EVM) Activities and will provide the requested inputs to the master schedule that will allow EVM reports to be produced.

5.6.3.3 Describe the Bidder's capability to manage the Project via Earned Value Management. Provide sample reports and requirements. Indicate how reporting will be managed.

5.6.3.4 Provide project status report samples, showing project metrics, and indicate how the Project will be monitored via reporting and dash boarding.

5.6.4 Risk Management

Describe the Bidder's approach to managing, identifying, mitigating and tracking risks. Identify any and all perceived risks associated with this project and propose an approach to mitigating these risks.

5.6.5 Issues Management

Describe the Bidder's approach to managing, identifying, mitigating and tracking issues.

5.6.6 Project Management Change Control

5.6.6.1 Describe the Bidder's approach to change control and how it aligns with The Companies' expectations as described in Section 3.5.3 for Project Change Control, Scope Chance Control and Contractual Change Control.

5.6.6.2 In the event that any assumptions are incorrect or inaccurate, identify the Bidder's willingness to allocate the resources necessary to meet the Project timeline and delivery requirements at no charge to The Companies and not issue Change Orders based on such incorrect or inaccurate assumptions, unless such inaccuracy is directly attributable to the performance or information provided by The Companies.

5.6.6.3 Identify the Bidder's willingness to provide The Companies with advanced written notification of The Companies' failure to meet its obligations, with such notification in a timeframe that allows The Companies to correct such performance issues prior to requesting a Change Order, including a request for a Change Order seeking relief under any agreed-to financial structure.

5.6.7 Sarbanes-Oxley (SOX) Compliance

The Companies require the Bidder to perform the following services as it relates to SOX Compliance in the Customer Facing Solutions product as configured and deployed for The Companies:

5.6.7.1 SOX compliance strategy and planning

5.6.7.2 Provide all software installation, design, and configuration documentation to satisfy all appropriately identified SOX controls requirements with The Companies' involvement.

5.6.7.3 End to end testing and documentation of The Companies SOX controls as related to the project specific info processes.

5.6.7.4 It is expected that the Bidder has a strong understanding of SOX controls configuration in the Customer Facing Solutions product as configured and deployed for The Companies. This is inclusive of but not limited to the items listed below:

5.6.7.4.1 Identify, develop and configure specific, appropriate and effective SOX controls in project specific info and ensure they operate effectively.

5.6.7.4.2 Identify and develop specific processes and procedures to ensure the SOX controls operate effectively and that evidence is available to support their operating effectiveness.

5.6.7.4.3 Develop and provide appropriate training and training material, and work with change management team to ensure controls are included as part of training curriculum.

5.6.7.4.4 Interface with and provide assistance to The Companies staff and its third-party contractors to ensure SOX compliance, such as providing documentation of project specific SOX related process flows and identified controls based upon the project specific processes, etc.

5.6.7.4.5 Interface with and provide assistance to The Companies staff and its third-party auditors to conduct SOX control evaluations and audits.

5.7 Proposed Project Organization

Details to be provided by the Bidder in separate appendices attached to response.

5.7.1 Project Organization Chart

Provide a proposed project organization chart in an attached appendix.

5.7.2 Roles and Responsibilities (The Companies and Bidder)

5.7.2.1 Identify an overall Project Executive Sponsor, as well as the corresponding subcontractor Executive Sponsors, if applicable, and delineate anticipated roles, responsibilities, and level of involvement.

5.7.2.2 Describe the individual roles and responsibilities that The Companies and the Bidder's personnel, including subcontractors, will assume for this project as an attached appendix. Identify the roles, responsibilities, and party responsible, in the format of a detailed Responsible, Accountable, Consulted, and Informed (RACI) matrix.

5.7.2.3 Identify The Companies' resource requirements for each phase of the Bidder's methodology and include recommended qualifications and expertise.

5.7.3 Proposed Bidder Team for this Project

5.7.3.1 Identify the Bidder's proposed team and describe the experience, skills, education, training, qualifications and certifications for each position.

5.7.3.2 Identify the location of the personnel who will be assigned to this Project.

5.7.4 Approve and Remove Resources

Acknowledge The Companies' right to approve and remove resources of the Bidder and any subcontractor Supplier.

5.7.5 Key Personnel

Identify Key Personnel and provide a commitment not to remove such Key Personnel for the duration of the Project.

5.7.6 Subject Matter Experts

Identify when Bidder's subject matter experts will be required to participate on the Project and provide contractual assurances that such individuals will be available as specified in the project schedule.

5.7.7 Resource Transition Period

Acknowledge the Bidder's willingness to provide a three week no cost transition period in the event that Bidder staff or its subcontractor's personnel are removed from the Project.

5.7.8 Work Hours

Identify the Bidder's standard business hours. The Companies require that the Bidder provide adequate coverage throughout the work week. Full time on-site staff is expected to work the same hours as The Companies' staff, unless otherwise approved in advance by The Companies.

5.8 Proposal and Cost Summary

5.8.1 License Fees, Implementation Fees, Training and Staffing Summary

Please provide a summary of the Bidder's identified License Fees, Upgrade and Maintenance costs, implementation hours and fees in the format provided in the summary tab of Appendix E: Detailed Cost and Staffing Model. This provides a high-level cost estimate for the entire Project, including internal cost to The Companies and external Bidder and subcontractor cost for the Project. It is important for The Companies to fully understand the Bidder's costing model such that there are cost levers that can be adjusted as needed, especially in the case of the Hawaii PUC potential requests.

In addition to the costs cited above, pricing for all technical training as described in Section 5.5.2 should be assigned a cost, or multiple costs of providing multiple training options.

5.8.2 Costs and Staff Loading Detail Information

Please complete and include in the proposal the detailed cost and staffing model as provided in the format of the details tab in Appendix E: Detailed Cost and Staffing Model, in order to support the summary estimates. This should cover both the Bidder costs and staffing as well as the recommended costs and staffing for The Companies. It is important for The Companies to fully understand the Bidder's costs and staffing model such that there are cost levers that can be adjusted as needed.

5.8.3 List and Net Resource Rates

5.8.3.1 Include a global "preferred rate card" schedule outlining the list and net rates for all resource categories, including, but not limited to, strategic consulting, process, functional and technical consulting, and onshore and offshore development, by geography/region relative to the anticipated spend level for this opportunity and potential future projects. The rate card should provide additional resource rate consideration as overall spend levels increase. The rate card should also include minimum levels of experience per resource.

5.8.3.2 Provide an acknowledgment that the agreed-to net resource rates will apply to all Change Orders issued under this Project.

5.8.3.3 Provide an acknowledgment that travel time will not be billed and any overtime work will be billed at the negotiated rates, with no additional charge or premium.

5.8.4 Rate Lock/Cap

5.8.4.1 Identify the period of time that the Bidder will lock resource rates to protect against immediate resource rate increases.

5.8.4.2 Identify the annual percentage cap on rate increases The Companies will receive subsequent to such rate lock period.

5.8.4.3 Provide an acknowledgement that the rate lock/cap will apply to all utilized subcontractors.

5.8.4.4 Provide an acknowledgement that the rate lock will apply to future promotions of assigned resources (e.g. continue to bill the promoted resource at the original rate).

5.8.5 Resource Ramp-up

Bidder staff will participate in The Companies' on-boarding for a period of five (5) business days at no charge to The Companies.

5.8.6 Quality Reviews

Identify the Bidder's willingness to provide quality assurance resources to The Companies at no charge for the purpose of conducting quality assurance reviews throughout the various phases of the Project.

5.8.7 Expenses

5.8.7.1 Identify estimated expenses. Include travel, network connectivity, hardware, third party software, etc. Identify instances where the Bidder will not charge any reimbursable costs. Use The Companies' standard expense policy. Expenses must be preapproved by The Companies and should reflect actual costs. Per diems are not allowed.

5.8.7.2 Identify the Bidder's willingness to limit expenses to an actual not to exceed percentage of the total annual spend for the Customer Facing Solutions project. Identify the proposed percentage.

5.8.8 Proposed Risk/Gain Sharing Structure

The Bidder shall submit a bid that reflects its preferred approach and philosophy toward fees and risk/gain sharing including possible use of Key Performance Indicators (KPI) for measuring performance (i.e. Time & Materials with not to exceed or fixed, etc.). The Bidder shall also explain additional costs or fees not included in rates and travel expense. If contingency factors are included, please explain in writing.

5.8.9 Technology Consulting Master Services Agreement

Review The Companies agreement provided in **Section 12 – Appendix G.** Identify any exceptions.

5.8.10 Contract Structure

The Companies desire the following contract structure to govern its relationship with its preferred Bidder. Provide the Bidder's acknowledgement to such a structure. The MSA will serve as a master agreement to govern the general relationship between The Companies and the Selected Supplier for the current Project and any other future project that The Companies may consider with the Selected Supplier. The MSA will include the legal elements, such as Warranty, Limitation of Liability, Governing Law, Representations and Warranties, Indemnification, Termination, etc. The MSA will take precedence over the MSOW and the MSOW will take precedence over the ISOWs if there is a conflict in the terms and conditions of these documents.

- The Bidder will develop a Master Statement of Work ("MSOW") document to serve as the baseline from which to manage the Project. The MSOW should contain details regarding the business arrangement for the entire Project, governing all Individual Statements of Work ("ISOW") associated with the Project (to be provided for each phase). The MSOW should contain the following:
  - overall Project cost;
  - consulting rates, and associated price protection;
  - expenses, agreed-to price protections, and travel/expense policies;

- financial structure, including risk sharing;
- high level project scope (e.g. modules to be implemented, training, development, etc.), timeline and assumptions;
- staffing chart and estimated overall level of effort for the Bidder and The Companies;
- change control procedures;
- acceptance provisions, including minimum testing period, no charge re-performance and The Companies right to re-test;
- personnel and subcontractor provisions (e.g. right to approve and remove), including prime Bidder obligation; and
- Executive sponsor(s).

- ISOWs will be created for each phase of the Project. The ISOWs should, at a minimum, include the following:
  - detailed project scope, timeline and criteria for the applicable milestone;
  - definition and description of all deliverables for the applicable phase, including party responsibility and delivery dates;
  - acceptance criteria for deliverables/milestones;
  - estimated fees and associated deliverables/milestone completion dates (with linkage to the risk sharing financial structure);
  - payment schedule with associated deliverables/milestones; and
  - identification of key personnel assigned to Project

5.9 Supplier Capabilities and Experience

5.9.1 References and Related Engagements

Identify and provide details of four (4) recent Customer Facing Solutions engagements within the Electric Utility industry, occurring within the last five (5) years that are relevant to the objectives and requirements of this RFP. These should be engagements in which the Bidder acted as the Prime Supplier and should be of similar size and complexity to that of The Companies. The details that the Bidder provides should demonstrate the relevancy that the referenced engagements have to the requirements of this RFP and the Bidder's proposed approach. Please date each implementation by completed date.

For each referenced engagement, provide the following details.

Details	(Client 1)	(Client 2)	(Client 3)	(Client 4)
Client Contact Information				

(Name, telephone, e-mail)				
Client Annual Sales Revenue				
Client Key Business Drivers				
Number of Business Units, Locations and Users				
Role during engagement: Primary or Sub-Contractor				
Duration of Engagement and if Engagement is currently active				
CFS Applications implemented (include release level)				
Number of FTEs				
Planned Cost vs. Actual Cost				
Planned Schedule vs. Actual Schedule				
Contract Type				
Lessons Learned				

5.10 Technology Consulting Master Services Agreement

See Appendix G.

5.11 Bid Documentation Requirements

See Proposal requirements in Section 2.1.

5.12 Listing of All Exceptions

See Proposal requirements in Section 2.6.

Appendices

Include, at a minimum, the following appendices with the proposal. The appendices must provide the specific details of the proposal and afford the highest degree of transparency.

a) In-scope/out-of-scope Service Matrix

b) Completed Functional Requirements Assessment (Appendix C)
MUST BE SUBMITTED IN EXCEL FORMAT; PDF NOT ACCEPTABLE

c) Completed General Technical and Cybersecurity Requirements Assessment (Appendix D)
MUST BE SUBMITTED IN EXCEL FORMAT; PDF NOT ACCEPTABLE

d) Project Schedule
MUST BE SUBMITTED IN MS PROJECT 2010 FORMAT; PDF NOT ACCEPTABLE

e) Project Organization / Governance Chart (The Companies and Bidder)

f) Roles and Responsibilities Matrix (The Companies and Bidder)

g) Detailed Cost Estimate (Appendix E)
MUST BE SUBMITTED IN EXCEL FORMAT; PDF NOT ACCEPTABLE

h) Global Rate Schedule (Appendix E)
MUST BE SUBMITTED IN EXCEL FORMAT; PDF NOT ACCEPTABLE

i) Staff Loading Charts (The Companies and Bidder) in MS Excel (Appendix E)

j) Resumes

k) Draft (Red-lined) Technology Consulting Master Services Agreement (Appendix G)

Appendix A – Intent to Submit Bid Form

Please complete and return via email the following page containing the formal "Intent to Submit Bid Form".

See electronic file called "Appendix A – Intent to Submit Bid Form.docx".

Appendix B – Glossary

Term	Definition
Advanced Distribution Management System (ADMS)	The Advanced Distribution Management System (ADMS) application provides a centralized platform for operators to leverage multiple smart grid systems and capabilities
Advanced Metering Infrastructure (AMI)	The hardware and software, together with the telecommunications services, that enables automated meter reading and other capabilities.
(The) Companies	Hawaiian Electric Company, Inc., Maui Electric Company, Ltd. and Hawai'i Electric Light Company, Inc.
Configuration	Configuration of software functionality by establishing, entering, or resetting parameters.
Consultant	A person or agency employed to provide expert or professional advice to The Companies
Contract Documents	The documents that will govern the services to be delivered under this RFP shall consist of the provisions set forth in the Master Agreement, the applicable work authorization(s), and the statements of work describing specific services to be provided to The Companies incorporated into the applicable work authorization, and all exhibits attached to or incorporated into the foregoing (collectively, the Contract Documents).
Customer Facing Solutions (CFS)	Customer Facing Solutions allows customers to access their private, personal energy consumption. They can view detailed information about their energy usage, estimate their monthly usage, and receive tips for decreasing their energy consumption.
Deliverable(s)	A formal product(s) or service(s) provided during the project that is subject to The Companies' approval and/or is required by the specific methodology employed during the project.
Distribution Automation (DA)	An application that quickly detects and isolates outages and service interruptions, thus enabling restoration crews to efficiently restore power.
ESB	An enterprise service bus (ESB) is a software architecture for middleware that provides fundamental services for more complex architectures, such as providing a mechanism that manages access to applications and services (especially legacy versions) to present a single, simple, and consistent interface to end-users via Web- or forms-based client-side front ends.

Earned Value Management (EVM)	A method for measuring project performance. It indicates how much of the budget should have been spent, in view of the amount of work done so far and the baseline cost for the task, assignment, or resources.
Expert	One who is knowledgeable in a specialized field, based on specific knowledge, education, training, and experience.
"Go/No-Go" Criteria	Event outcomes/results which are determinative of whether or not to continue or suspend the process.
Information Assurance (IA)	Information assurance (IA) is the practice of assuring information and managing risks related to the use, processing, storage, and transmission of information or data and the systems and processes used for those purposes.
ITS or IT	The Companies' Information Technology and Services Department.
Meter Data Management System (MDMS)	A Meter Data Management System (MDMS) collects and stores meter data from a head-end system and processes that meter data into information that can be used by other utility applications including billing, customer information systems, and outage management systems.
Milestone	Reference points denoting major events during the course of a project which are used to monitor the progress of a project.
Prepay System	An application where electricity customers are able to pay for their usage on a daily basis (as compared to the traditional method of a monthly billing). Prepay allows a customer to have electricity service without placing an initial deposit.
Production Environment	Where the environment is such that the Customer Facing Solutions solution is in full operation as used by The Companies in the normal course of conducting business.
Project Contract	The Companies' Standard Form Agreement approved by HAWAIIAN ELECTRIC's Legal Department
Project Plan or Work plan	The detailed list of tasks to be accomplished by the Bidder to complete the Customer Facing Solutions project, the timelines for commencement and completion and specific Bidder Personnel responsible for each task.
Proposal Due Date	The data and time by which the Bidder's proposal must be received in order to be considered by The Companies.
Report	A formatted and organized presentation of data commonly used in the industry (meets industry standards) which presents specific focused content.

Silver Springs Network (SSN)	An industry leader in smart grid technology, who for more than a decade, has implemented their smart grid mesh technology that currently serves over 17 million homes and businesses for more than 30 utilities.
User Acceptance Test	An evaluation of the total solution which assures end users that such solution to be placed in operational use is acceptable.
Usability	The ability to use the solution technically and functionally
Volt/VAR Optimization (VVO)	An application that uses voltage data collected by AMI at customer sites. VVO enables The Companies' operators to safely and more precisely control voltages, resulting in saved energy, less carbon dioxide emissions, and lower customer bills. VVO minimizes voltage loss on the distribution circuits and increases the efficient operation of customer appliances.

Appendix C – Functional and Technical Requirements

Appendix C contains an electronic file of the Functional and Technical Requirements specific for the CFS. It is important for Bidders to fully read, understand and respond to the items in this document as per instructions indicated in the "INSTRUCTIONS" tab. The completed spreadsheet is required to be returned in electronic form with the Bidder's proposal response.

It is also important for Bidders to understand that the requirements requested span a large and broad set of capabilities by which The Companies are looking to learn and understand not only what may be possible in its proposed implementation of the CFS, but also to gain insight into the future state and intents of the product. Some requirements may not be met today while others are planned for in the future. Bidders should clearly understand the four categories for requirements and how the six levels of responses are used in combination to determine the overall strength of the vendor product/offering. It does not mean that ALL requirements will be implemented at once, nor is it a requirement for Bidders to meet ALL categories of requirements in order to submit a proposal.

See electronic file called "Appendix C – Functional and Technical Requirements.xlsm".

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
1	**Hawaiian Electric Project Assessment Questionnaire Customer Facing Solutions**												**Vendor Response Options XYZ, Inc.**					
2																		
3						Vendor Name:	XYZ, Inc.											
4						Project:	Customer Facing Solutions						Spreadsheet Template Version is:					
5						Date Questionnaire Released:	03/27/15											
6						Date Questionnaire Due:	04/24/15						2.0 as of 01/20/2015					
7						Date of Last Assessment Ratings Added by HE:	01/20/15											
8	Information Only	Ideal	Core	Mandatory		**Hawaiian Electric Smart Grid Customer Facing Solutions Functional Requirements**	Enter the numeric value "1" (not text) as the flag values in the yellow highlighted response options. Do not flag more than 1 (one) box per row. Use Grouping controls on far left side of this spreadsheet to fully open all text and response options. Use beige areas in expanded rows to enter any desired hyperlinks or additional explanation text.						System as Proposed Meets Standard	System will meet standard in scheduled upcoming release	System can meet standard using 3rd Party products	System can meet standard with cusomization	System as proposed does not meet standard	Other
17	**Design Approach**																	
18	**Design Approach - These requirements describe basic design principles**																	
19													Meets	Will	3rd P	Cust	No	Other
20			1		1.05	The system shall be responsively designed, that is able to adapt to a multitude of different screen sizes across phones, “phablets”, tablets, desktops, game consoles, TVs, or wearables												
21		1			1.06	In addition to a responsively designed web site, the vendor shall provide all functionality included in these requirements via a mobile application												
22			1		1.07	The system shall be capable of operating on various browsers (e.g. IE, Chrome, Safari, Firefox, etc.) and on all current and recent versions of those browsers (i.e. browser independent)												
23			1		1.08	The system shall be capable, at minimum, of operating on all browsers/versions used at the Companies												
24			1		1.10	The system shall be capable of interfacing as needed with backend systems and 3rd party applications including but not limited to the following: SAP CIS, ADMS/OMS, Pre-pay, Alerts and Notifications engine, MDMS, DRMS, CMS, Weather data provider, Western Union, Check-free, Smart Business Central, Clean Power Research, Rate Schedule Comparison Engine, Usage Scenario ("what if") Tool.												
25			1		1.15	Third party websites that are accessed through the system will be branded per company standards and will provide a seamless experience to the user												
26			1		1.30	The site shall time-out the user's session due to inactivity after a configurable number of minutes												
27			1		1.35	For interval data pages, from the moment a request is issued to the moment the page is rendered, the system shall not take more than 5 seconds to load the page.												
28			1		1.37	For other than interval data pages, from the moment a request is issued to the moment the page is rendered, the system shall not take more than 1 second second to load the page (i.e. sub-second response).												
29			1		1.40	The system shall enable an authorized internal user/web administrator to see the same content as the web user												
30		1			1.45	The system shall provide the capability of co-browsing (i.e. customer gives permission for internal user to see their session)												
31			1		1.50	The system shall allow an authorized web administrator to edit alert message content, banners, and other specific content not controlled by CMS and as specified by the Company												
32			1		1.55	For content not controlled by CMS, the system shall have a defined content delivery mechanism/application including controls of content migration from test environments through publication in production												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
33				1	1.60	The system shall encrypt all customer information in transit, including usage data and any information that can be linked to an individual customer												
34				1	1.65	The system shall encrypt all Personally Identifiable Information (PII) commonly covered by data privacy laws both in transit and at rest (these are Social Security Number, driver's license, and financial account numbers)												
35				1	1.70	The system shall hash Customer PINs and Passwords in transit and at rest using the SHA3 algorithm												
36			1		1.75	The system shall provide an audit trail via a transaction log of all actions the user takes and updates the user makes (e.g., user registration, user profile updates, transactions completed, etc) which can be accessed by authorized internal users												
42	**Accessibility**																	
43	**Accessibility - These requirements define the design standards that must be met in order to be WCAG Compliant**																	
44													Meets	Will	3rd P	Cust	No	Other
45				1	2.05	All pages must meet the Web Content Accessibility Guidelines (WCAG) WCAG 2.0, Level AA guidelines for Operable content, which includes the following top-level guidelines: 2.1 Make all functionality available from a keyboard; 2.2 Provide users with disabilities enough time to read and use content; 2.3 Do not design content in a way that is known to cause seizures; 2.4 Provide ways to help users with disabilities navigate, find content and determine where they are (The details of the Level AA compliance are defined in the WCAG 2.0 standards under section 2, Operable)												
46				1	2.10	All pages must meet the Web Content Accessibility Guidelines (WCAG) WCAG 2.0, Level AA guidelines for Robust content, which includes the following top-level guideline: 4.1 Maximize compatibility with current and future user agents, including assistive technologies (The details of the Level AA compliance are defined in the WCAG 2.0 standards under section 4, Robust)												
47				1	2.15	All pages must meet the Web Content Accessibility Guidelines (WCAG) WCAG 2.0, Level AA guidelines for Understandable content, which includes the following top-level guidelines: 3.1 Make text content readable and understandable; 3.2 Make Web pages appear and operate in predictable ways; 3.3. Help users avoid and correct mistakes (The details of the Level AA compliance are defined in the WCAG 2.0 standards under section 3, Understandable)												
53	**Guest Access**																	
54	**Guest Access: These requirements describe the functionality that is available without user authentication**																	
55													Meets	Will	3rd P	Cust	No	Other
56			1		3.05	The system shall enable an authorized web administrator to specify which functions require authentication vs. which can be done as a guest (e.g., authentication required to see usage and billing data; no authentication required to initiate move-in request)												
57			1		3.10	Upon selecting an option that does not require the user to login, the system shall serve up the requested content												
58			1		3.15	At minumum, the system shall enable the following functions to be available with Guest access: Contact Us, Registration, Move In, Guest Payment, various access to content such as Rate Schedule information												
59			1		3.20	The system shall provide the ability to submit an email to HECO, MECO or HELCO under the contact us menu option												
60			1		3.25	The system shall be capabile of providing a "Need Assistance?" guided help feature (when applicable).												
61		1			3.30	The system shall be capable of providing a "virtual agent" capability												

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62			1		3.35	The system shall be capability of providing a live chat capability												
63			1		3.40	The system shall be capable of enabling the user to call to a live CSR (phone system will provide option for virtual hold if no agent available)												
64			1		3.45	The click to chat/call, co-browsing, virtual agent, and Guided Help help options shall be provided to assist all users of the web site (customers and non-customers)												
70	**Registration**																	
71	**Registration: These requirements describe the capability for a user to initially register for an Online Account**																	
72													Meets	Will	3rd P	Cust	No	Other
73			1		4.05	The system shall enable a guest user to register for an Online Account												
74			1		4.10	On the home page, the system shall provide an option to open help text for more information about registration.												
75			1		4.15	The system shall make it clear (by providing specific verbiage) that registration is not required to interact for such things as bill payment												
76			1		4.20	The system shall allow users to register by contract account number as well as service contract number but registration is performed at the contract account number level												
77			1		4.25	The system shall enable an authorized web administrator to define the information and associated validations required to complete registration (e.g., user name/email address, password, contact information, security questions, etc)												
78			1		4.30	The system shall verify and validate submitted registration information												
79			1		4.32	The system shall have extended verification and validation for business accounts to ensure that the user is authorized for access to the account based upon information pre-existing on the account												
80			1		4.35	The system shall have extended verification and validation for commercial/industrial (assigned) accounts to ensure that the user is authorized for access to the commercial/industrial (assigned) account based upon information pre-existing on the account												
81			1		4.40	The system shall have the capability to validate a submitted user ID and password during registration to ensure they meet naming convention restrictions and security requirements												
82			1		4.45	The system shall have the capability to validate required information submitted by the user to complete their customer profile to ensure that they meet basic field requirements												
83			1		4.50	The system shall enable the user to link multiple Contract Accounts to a single user (such as linking a Residential and a Commercial account, or linking family members' contract accounts)												
84			1		4.55	During the registration process, the system shall enable users to enroll in programs and services as defined by an authorized web administrator (e.g. online billing, online payment, demand response programs, etc)												
85	1				4.65	The system shall provide a separate COPPA-compliant registration process for minors (which is largely the same as the regular registration process, but provides alternate messaging during cross sell/up sell process)												
86				1	4.65.05	If the system enables registration by minors, it shall have COPPA-compliant tracking proccesses												
87				1	4.70	The system shall have the capability to present to the user and record acceptance of Terms and Conditions including the version of T&C accepted												
88				1	4.72	The system shall have the capability to present to the user and record acceptance of Rule 16 and Rate Updates including the versions accepted												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
89			1		4.75	The system shall have the capability to provide for the upsell of online billing/payment and other program enrollment during the registration process												
90			1		4.80	The system shall have the capability to generate a user profile and preferences based upon the information entered during the registration process												
91			1		4.85	The system shall have the capability to present a confirmation page to the user indicating that registration was successful												
92			1		4.90	The system shall have the capability to send an email confirmation to the user indicating registration was successful												
98	**Authentication**																	
99	**Authentication: These requirements describe the user log-in process and validations**																	
100													Meets	Will	3rd P	Cust	No	Other
101			1		5.05	The system shall support single sign-on for authentication and authorization of all users												
102			1		5.10	In order to access secure transactions (as defined by the authorized web administrator), the user must provide an Online Account username and password												
103			1		5.15	Upon selecting an option that requires the user to login, the system shall serve up a login prompt for username and password.												
104			1		5.20	The system shall provide a prompt to login on the main landing page (i.e. the home page)												
105			1		5.22	The system shall provide a prompt to login on the user-specified static pages												
106			1		5.25	Upon successful login, the user shall see a greeting that helps the user confirm his successful login on the Online Account landing page												
107			1		5.30	The system shall have the ability to store the username after the first successful login, if the browser supports this capability.												
108			1		5.35	The system shall provide an option to select "Remember Me" as a way to store the username for subsequent visits												
109			1		5.40	If user deselects the Remember Me option, the cookie will be deleted from the system and upon return to the site on the next visit, the username field will be blank												
110			1		5.45	The user shall have the ability to retrieve their username.												
111			1		5.50	The user shall have the ability to retrieve their user password.												
112			1		5.55	If the user askes to retrieve their username and/or password, the system shall respond in near real-time												
113			1		5.60	The system shall be the system of record for all customer authentication information (user id's, hashed passwords, password												
119	**Online Account Landing Page**																	
120	**Online Account Landing Page: This section describes the initial content and functionality available to the user once they have authenticated**																	
121													Meets	Will	3rd P	Cust	No	Other
122			1		6.05	After login, the system shall provide links to available transactions on the landing page												
123			1		6.10	After login, the system shall provide an option to initiate access to payment information												
124			1		6.15	After login, the system shall provide an option to initiate access to billing information												
125			1		6.20	After login, the system shall provide an option to initiate access to usage information												
126			1		6.25	After login, the system shall provide access to alert information												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
127			1		6.30	The system shall provide users the ability to customize their landing page (e.g., change the default view)												
128			1		6.35	The system shall have the capability to retrieve the customer profile, customer preferences, billing information, rate schedule information and other personalized content including personalized energy savings tips.												
129			1		6.40	The system allow for personalized, dynamic, and static content on the landing page including links to rate schedule and relevant energy tips												
130			1		6.45	The system shall provide online and live help options on the landing page												
136	**Preferences**																	
137	**Preferences: This section describes the capabilities for the user to establish account preferences for access, notifications, profile information, etc.**																	
138	**Access Preferences**												Meets	Will	3rd P	Cust	No	Other
139			1		7.01	The system shall not limit the number of users who can access a given Online Account (i.e. multiple users can be granted access to the same Online Account)												
140			1		7.02	The system shall not limit the number of users who can concurrently access a given Online Account												
141			1		7.03	The system shall allow a configurable number of concurrent accesses by the same external userid to the same Online Account on the same or different platforms (i.e. allow n concurrent sessions, possibly on laptop and mobile device concurrently)												
142			1		7.04	If multiple external userids are accessing the same Online Account concurrently, the system shall display an alert that multiple users are accessing the account												
143			1		7.05	If an internal user accesses an Online Account that an external user is concurrently accessing, the system shall display a message to the internal user that the account is being concurrently accessed externally												
144			1		7.06	If an internal user accesses an Online Account that another internal user is concurrently accessing, the system shall display a message to the second internal user that the account is already being accessed (by an internal user) and is locked for update												
145			1		7.10	If multiple users are granted access to a given Online Account, the system shall have the capability to assign only one user the administration rights to a given Online Account.												
146			1		7.15	The system shall default subsequent (non administrator) user privileges to "view only" access												
147			1		7.20	The system shall allow the Online Account administrator to grant privileges to other users (i.e. allow privileges beyond the default "view only")												
148			1		7.23	The system shall enable the Online Account administrator to re-assign the administrator role to another user												
149			1		7.25	The system shall have the capability to display a preferences page which lists all the preferences that the user can change such as contact preferences and linking to multiple contract accounts.												
150	**Profile Preferences**												Meets	Will	3rd P	Cust	No	Other
151			1		7.30	The system shall enable an authorized web administrator to designate which profile-related data shall be updateable by the user (e.g. User ID, password, Primary E-mail Address, Security Questions and answers, and list of linked contract accounts, account nick names, etc)												
152			1		7.32	The system shall provide the capability for the user to change information designated by an authorized web adminstrator as updateable												

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153			1		7.34	The system shall have the capability to send the profile changes to all the relevant sub-systems (e.g. SAP CIS, ADMS, etc)												
154			1		7.34.05	When the system sends the profile changes to all relevant sub-systems (e.g. SAP CIS, ADMS, etc), it shall create a log entry that the notification to the sub-system was sent.												
155			1		7.35	The system shall have the capability of allowing the user to set/update a billing amount threshold (i.e., a "goal" that their bill will not exceed $xx).												
156			1		7.40	The system shall enable the user to view and update profile data on all accounts to which they have access (including the accounts which are under the umbrella of a main account to which they have access)												
157			1		7.50	The system shall have the capability to re-display the user profile with the updates and provide a confirmation message indicating the changes were successfully made												
158	**Alert Preferences**												Meets	Will	3rd P	Cust	No	Other
159			1		7.55	The system shall allow notification preferences to be set by function (e.g., billing, payment, outages etc.)												
160			1		7.60	The system shall provide the capability for a user to provide multiple channels and associated values for notification as well as the frequency of receiving communications												
161	**TCPA Preferences**												Meets	Will	3rd P	Cust	No	Other
162			1		7.65	The system shall have the capability for users to set marketing preferences by communication channel												
163				1	7.70	The system shall provide marketing Opt-in/Opt-out preferences for special interest categories												
164				1	7.75	The system shall provide marketing Opt-in/Opt-out preferences separately for each program and channel												
165				1	7.77	The system shall log all changes (start and end date) to communication preferences and allow authorized internal users to view the log												
166				1	7.80	The system shall have the capability to allow the customer to opt-in/opt-out of all promotional campaigns (including mailings, telephones, SMS, internet).												
167			1		7.85	The system shall have the capability to analyze a user's historical site visits to determine whether they should be prompted with an opt-in to marketing communications for categories of previous interest												
173	**Alerts and Event Notifications**																	
174	**Alerts and Event Notifications: This section describes the alerts and event notifications that will be displayed on the Online Account.**																	
175													Meets	Will	3rd P	Cust	No	Other
176			1		8.05	If the user has set a billing amount threshold, then upon login, the system shall display an alert notice if the forecasted bill amount exceeds the user-determined threshold by a configurable amount												
177			1		8.10	If the user is enrolled in demand response program alerts, then upon login, the system shall display an alert notice that there are alerts to view, and provide a link to the alerts page.												
178			1		8.15	Upon selection of the "Alerts" option the system shall display a list of alerts in descending order by date.												
179			1		8.20	On the Alerts page, the system shall display the date of the alert, and the alert description.												
185	**Resolve Account**																	
186	**Resolve Account: This section describes the functionality for resolving to a single Contract Account and/or Service Contract in order to view associated detailed data. The Online Account is established at the Contract Account Level, but a given user can have multiple Contract Accounts hooked to their userid. Also, a specific Contract Account can include multiple Service Contracts. Depending on the information the user wants to see, it may be necessary to resolve to a single Contract Account and Service Contract.**																	

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187													Meets	Will	3rd P	Cust	No	Other
188			1		9.05	If a user has a single contract account that contains a single service contract, then upon login, the user will see his contract account and service contract information, without having to individually select a contract account or service contract.												
189			1		9.05.05	The system shall display active accounts and also accounts that have been closed for less than a configurable number of days (configuration value determined by the authorized web administrator at a global level)												
190			1		9.10	If a user has multiple contract accounts linked to the user ID, then upon login, the system shall display a list of those contract accounts, and prompt the user to choose one contract account to interact with first.												
191			1		9.15	If a user with multiple contract accounts chooses a contract account with multiple service contracts, then the system shall display a list of those service contracts, and prompt the user to choose one contracts to interact with before displaying the Online Account home page.												
192			1		9.20	If a user has a single contract account but multiple service contracts, then upon login, the system shall prompt the user to choose a service contract to interact with before displaying the Online Account page.												
193			1		9.22	If a user has inactive (closed) service contracts linked to their Online Account, the system shall display the inactive account in the multiple select list and allow the user to select the inactive account												
194			1		9.25	Once a user has selected one contract account from a list of all available contract accounts, then the system shall display the billing and payment information on the Online Account home page for that contract account.												
195			1		9.30	Once a user has selected one service contract from a list of all available service contracts under a contract account, then the system shall display usage information on the Online Account home page for that service contract.												
196			1		9.35	The system shall allow the customer with multiple contract accounts to return to the list of contract accounts and choose a different contract account to interact with.												
197			1		9.40	The system shall allow the customer with multiple service contracts to return to the list of service contracts and choose a different service contract to interact with.												
203	**Account Display**																	
204	**Account Display: This section describes what the user will see once they have authenticated and resolved to a specific contract account/service contract.**																	
205													Meets	Will	3rd P	Cust	No	Other
206			1		10.02	Upon successful login, the system shall be capable of displaying personalized content based on attributes defined by the authorized web administrator (e.g., userid profile, rate schedule, customer segment, enrolled programs (e.g., AMI, Pre-pay, DR programs, auto bill pay, online billing, on-bill financing, etc))												
207			1		10.08	The system shall display the contract account and service contract number(s), account nickname(s), and service address(es) on designated Online Account pages.												
208			1		10.10	The system shall have the capability to display the current rate schedule												
209			1		10.11	The system shall have the capability to display the account status (e.g., active, closed)												
210			1		10.12	The system shall have the capability to display summary information such as: current bill amount, past due amount (if any), total bill amount, projected bill amount, payment due date, deposit amount owing/paid, current usage (if service contract has a smart meter) OR prior month usage (if service contract doesn't have a smart meter).												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
211			1		10.16	The system shall have the capability to display a configurable number of the customer's last payments including payment amount and date												
212			1		10.18	The system shall have the capability to display an option to obtain usage data and information (usage data drill-down) on the Online Account landing page												
213			1		10.20	The system shall have the capability to display a message at the top of the Online Account page if the service contract is already disconnected.												
214	**Usage General**												Meets	Will	3rd P	Cust	No	Other
215			1		10.22	Once authenticated and resolved to a single Service Contract, the system shall allow the user to access their interval data through pre-defined screens/reports based on criteria such as rate schedule												
216			1		10.24	The system shall have the ability to assign a default interval data report/view based on rate, user profile, and other attributes as defined by an authorized web administrator												
217			1		10.26	The system shall provide a user-friendly error message, in place of any requested report/view, when any interfacing system is unable to provide the data necessary to create the requested report/view (whether due to unavailability, inability to retrieve, or inability to display data)												
218			1		10.28	The system shall allow the user to access, via pre-defined reports/views, a configurable number of months of interval data (e.g. current month and 3 prior years)												
219			1		10.30	The system shall allow the user to access interval data at the lowest level in which it is stored (e.g., 15 minute, hourly)												
220			1		10.32	The system shall recognize the account's interval length and shall display data appropriately.												
221			1		10.34	The system shall provide reports/views at multiple levels that will enable drill down from the highest to the lowest level (e.g. bill period, daily, hourly, 15 minute)												
222			1		10.38	When daily usage is shown, the system shall provide a visual indicator that differentiates weekends, holidays, and weekdays (by on- and off-peak periods if a TOU rate).												
223			1		10.40	The system shall be able to compare projected month usage to prior year's usage at the same time (Month 13) to conclude whether current month usage is higher or lower than the previous year based on the daily average usage.												
224			1		10.42	The system shall have the ability to calculate and report the daily average kWh for current billing period usage.												
225			1		10.44	The system shall have the ability to compute and display the percentage difference in average daily usage for the projected billing cycle versus average daily usage in Month 13												
226			1		10.46	The system shall have the ability to display average daily kWh by month												
227			1		10.48	The system shall have the ability to display the account's billed amounts at the service contract level (i.e. excluding customer-level charges)												
228			1		10.50	The system shall have the ability to display usage values for a configurable number of consecutive billing periods along with year-over-year comparison for the most recent consecutive month (e.g. the most recent 13 consecutive months, the 25 month, and the 37 month)												
229			1		10.52	The usage report/view shall include an indication of the effective date of a rate change for all billing periods displayed												
230			1		10.54	Usage reports shall provide an indicator of a season change applicable to the tariff if one occurs in the requested report period.												
231			1		10.56	Usage reports shall provide an indicator of any demand-response event applicable to the account if one occurs in the requested report period.												
232			1		10.58	The system shall use an indicator to identify demand response event periods (e.g. the period from 2:00 - 6:00 p.m. on an event day)												

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233			1		10.60	All interval data, related calculations and reports, including those for the previous day (12am to 11:59pm) shall be available by hh:mm the following day.												
234			1		10.62	The system shall allow all users to export up to a configurable number of months of interval data (kWh) (i.e. via csv or excel).												
235			1		10.63	The system shall allow all users to export up to a configurable number of months of demand (kW) (i.e. via csv or excel).												
236			1		10.64	The system shall allow customers to download graphical reports (e.g. PDF or jpg).												
237			1		10.66	The system shall allow users to view the high daily temperature on kWh usage reports for the displayed time period.												
238			1		10.68	Wherever temperature data is displayed, the system should also display/make available humidity data												
239			1		10.70	The system shall automatically select the applicable weather data based on the account's zip code												
240			1		10.72	The system shall allow users with multiple accounts to request and view interval data reports graphically with a maximum of one service account on a single report at a time												
241			1		10.74	The system shall have the capability to display all available channels of interval data on a single report for one service account.												
242			1		10.75	The system shall provide a link from usage page to the Informational Content regarding the rate schedule												
243	**Usage - Compare Rates**												Meets	Will	3rd P	Cust	No	Other
244		1			10.76	The system shall enable the user to compare their costs, based on their actual historical usage, between their current rate and other rates for which they are eligible Example: Account is currently billed on Rate A, but is also eligible for Rates B and C. Based on actual historical usage, the system shall be able to calculate and display costs as if the account had been on Rates B and C for the last 12 months.												
245		1			10.76.05	The system shall enable the user to do scenario planning to test the impact of behavior changes. Example: Account is on Rate A, but is also eligible for Rates B and C. Customer is willing to reduce usage by x % during on-peak period. The system shall be able to re-calculate costs based on the reduced usage for Rates A, B and C.												
246	**Usage - Tiered**												Meets	Will	3rd P	Cust	No	Other
247			1		10.77	The Tiered usage report shall display current tier position for the current billing period.												
248			1		10.78	The Tiered usage report shall display final tier position reached for each previous billing period displayed.												
249			1		10.79	The system shall display an indicator showing where each tier was crossed												
250	**Usage - TOU**												Meets	Will	3rd P	Cust	No	Other
251			1		10.99	The system should be able to accommodate reporting of time of use rates – priority peak, mid-peak and off-peak (i.e. Rider M and T)												
252			1		10.80	The TOU usage report shall display the on-, mid-, and off-peak usage, when applicable by season.												
253			1		10.81	The TOU usage report shall include the percentage of usage that is on , mid-, and off-peak (if applicable).												
254			1		10.82	The TOU usage report shall indicate which time periods are on-, mid-, and off-peak (if applicable).												
255			1		10.83	The TOU usage reports shall display total usage for the on-, mid-, and off-peak periods for each billing period displayed												

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256			1		10.84	The system shall provide the cumulative on-, mid-, and off-peak (if applicable) kWh for all TOU-based rates for available billed periods.												
257			1		10.85	The TOU usage reports shall display average daily usage for the on-, mid-, and off-peak periods												
258	**Usage - Demand**												Meets	Will	3rd P	Cust	No	Other
259			1		10.86	The system shall have the ability to display both kW demand and kWh usage interval values												
260			1		10.86.05	The system shall have the ability to display high kW by month												
261			1		10.87	For rates that include Demand, the system shall display the maximum peak demand reached for the on-, mid-, and off-peak periods.												
262			1		10.87.05	The system shall have the ability to calculate and report the daily high for kW for current billing including the ratchet.												
263			1		10.88	For rates that include Reactive Demand, the system shall display the kVAR												
264			1		10.89	The system shall have the ability to use an indicator to identify the highest demand during the current period or any prior billing period												
265	**Usage - NEM**												Meets	Will	3rd P	Cust	No	Other
266			1		10.90	The TOU usage report for NEM customers shall display the total net on-, mid-, and off-peak usage (if applicable), and percentages of total net usage for each period.												
267			1		10.90.05	The TOU usage report for NEM customers shall display the total generated on-, mid-, and off-peak usage (if applicable), and percentages of total generated usage for each period.												
268			1		10.90.10	The TOU usage report for NEM customers shall display the total consumed on-, mid-, and off-peak usage (if applicable), and percentages of total consumed usage for each period.												
269			1		10.91	Non-TOU Net Energy Metering (NEM) customers shall be able to view net energy usage.												
270			1		10.92	Non-TOU Net Energy Metering (NEM) customers shall be able to view generated energy usage (total generated and net generated).												
271			1		10.92.05	The system shall be able to interface with smart inverters to show monthly generated energy for NEM Customers												
272			1		10.93	Non-TOU Net Energy Metering (NEM) customers shall be able to view consumed energy usage (total consumed and net consumed).												
273			1		10.94	The system shall allow visual display of negative usage for NEM customers.												
274			1		10.95	Net Energy Metering customers shall have an indicator if any data is a negative value (i.e.: net generation)												
275			1		10.96	Ths system shall be capable of displaying cost data including monthly cumulative net rolling credits for Net Energy Metering customers (e.g., projected costs, monthly billed cost)												
276			1		10.96.02	The system shall be able to display the NEM credit expiration dates associated to the net rolling credits for NEM customers												
277			1		10.96.05	The system shall be able to show a monthly minimum charge for NEM customers												
278			1		10.97	For Net Energy Metering customers, the monthly trend report shall display an indicator of when the current relevant period began												
279			1		10.98	The NEM usage reports shall display total usage and average daily usage.												
285	**Billing and Payment**																	

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
286	**Billing and Payment: This section describes the capabilities the user can access related to online billing and payment**																	
287					**Bill/Pay Display**								Meets	Will	3rd P	Cust	No	Other
288			1		11.05	The system shall have the ability to display billing and payment information that is available, such as: * the current amount due on the user's contract account * the minimum amount due for the contract account * estimated bill-to-date amount of the current billing cycle * forecasted amount at the end of the current billing cycle * the past due amount on the contract account * the prior past due amount on the contract account * deposit amount due on the contract account * deposit amount paid on the contract account * the payment due date * fee(s) (only when applicable) assessed.													
289			1		11.10	The user shall have the ability to drill down on the total amount due to receive a break out of usage based charges and customer based charges (i.e. "page 2" of the bill)												
290			1		11.15	The system shall suppress billing information that is not applicable to the customer's account (e.g. coincident demand)												
291			1		11.20	The system shall display a warning message to the user if the user's service contract is pending disconnection												
292			1		11.25	The system shall display the start and end date of past billing cycles and the projected end date of the current billing cycle												
293			1		11.30	The system shall have the ability to display the customer's billed amounts for up to three prior billing cycles, projection for the current billing cycle, and billed amounts for like months for up to 3 prior years. For example: If the current month is November 2014, the system shall display estimated bill to date for November 2014; billed amounts for October, September, and August 2014; billed amounts for November, October, September and August 2013, 2012, and 2011.													
294			1		11.35	For users with a contract account that is already enrolled into online billing, the system shall display an option for customer to retrieve and display the PDF customer bill												
295			1		11.40	The system shall enable the user to export bill detail include usage-based charges and non-usage-based charges for a configurable number of months into multiple file formats (e.g., excel csv)												
296					**Online Payment Prohibited**								Meets	Will	3rd P	Cust	No	Other
297			1		11.40	The system shall allow an authorized web administrator to define conditions under which the customer cannot make online payments (e.g., "cash only" customers, commercial/industrial customers).												
298			1		11.65	If the customer meets conditions that prevent online payments, the system shall provide instructions to seek alternate mechanisms to perform a payment (e.g. pay through user's bank bill-pay function, perform a guest payment with credit card on Western Union site, or pay in-person at a local office or an authorized 3rd party location.													
299			1		11.70	The system shall provide an option to locate local office and Authorized 3rd party payment locations (i.e. office locater)												
300			1		11.75	The system shall provide an option to redirect the user to the Western Union payment site.												
301					**Auto Bill Pay**								Meets	Will	3rd P	Cust	No	Other
302			1		11.45	For a user enrolled in Automatic Bill Payment, the system shall allow the user to add a bank account												
303			1		11.50	For a user enrolled in Automatic Bill Payment, the system shall **not** allow the user to edit a bank account												
304			1		11.55	For a user enrolled in Automatic Bill Payment, the system shall allow the user to delete a bank account												
305				1	11.57	The system shall mask the bank account number when the bank account number when it is being displayed												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
306			1		11.60	If the user is enrolled in Automatic Bill Payment, the system shall display a message such as "You are enrolled in Automatic Bill Payment. Your next payment will occur on or after xx/xx/xxxx" but shall **NOT** prevent online (Western Union) payment													
307	**1-Time Bill Pay**												Meets	Will	3rd P	Cust	No	Other
308			1		11.80	The system shall enable the user to make a "one time" bill payment, either as a guest or an authenticated user												
309			1		11.85	The one-time bill payment process shall include brief instructions including explanation of secure transmission, current amount due, due date, input area for date (defaulted to current day if prior to 6pm, next day if after 6pm), input area for payment amount, an option that displays a list of existing payment sources, an option to add a payment source, and an option (i.e. button) to submit the payment.												
310			1		11.87	Prior to submitting a one-time Bill Payment to back-end systems for processing, the system shall provide a payment review process that shows the requested payment date, requested payment amount, requested payment source to withdraw from, a "submit" option to submit the payment request, an "edit" option to edit the request, and a "cancel" option to cancel the payment request.												
311			1		11.88	The system shall have the ability to check for pending payments in the system of record and shall display a warning to the user if a pending payment exists (but does not prevent the second payment from processing if the user accepts the warning)												
312			1		11.89	If a user chooses the "submit" option from the one-payment review page, the system shall submit the payment request to the back-end, generate a confirmation page to confirm that the payment transaction was completed, and display a confirmation message indicating confirmation that the payment was submitted.												
313			1		11.90	Upon successful submission of the one-time payment, the system will generate an email confirmation notice to the user.												
314			1		11.92	If a user chooses the "edit" option from the one-time payment review page, the system shall return the user to the one-time payment page to edit his one-time payment request.												
315			1		11.94	If a user chooses the "cancel" option from the one-time payment review page, the system shall cancel the payment request and return the user to the Online Account landing page if the user was authenticated, or the HECO landing page if a guest.												
316			1		11.96	The system shall provide an input area for the payment amount field that accommodates the maximum amount accepted from a user for a single payment.												
317	**Pre-Payments**												Meets	Will	3rd P	Cust	No	Other
318			1		11.98	The system shall interface with the Pre-pay function to enable the user to monitor “real-time” energy use, pre-pay account balances (e.g. pre-pay running balance, pre-pay days remaining), make pre-payments, and receive pre-pay related notifications based on stored notification preferences												
324	**Service Requests**																	
325	**Service Requests: This section describes the capability for a user to interact with the system to request various types of products/services from HECO, such as move-in, move-out, etc.**																	
326													Meets	Will	3rd P	Cust	No	Other
327			1		12.02	The system shall enable an authorized web administrator to determine which service requests require authentication vs. which can be completed as a guest												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
328			1		12.03	The system shall enable an authorized web administrator to define eligibility criteria for each service request type												
329			1		12.04	The system shall have the capability to perform an eligibility check between the user and the service being requested												
330			1		12.05	The system shall present personalized service request forms (e.g., move in, move out) to the user based on characteristics/data the system can retrieve from the user or the system (e.g. SAP CIS).												
331			1		12.10	The system shall have the capability for the user to cancel all personalization to view all/generic forms.												
332			1		12.10	The system shall enable the authroized web administrator to specify which user information can be pre-populated into specific forms vs. which must be entered by the user												
333			1		12.15	The system shall pre-populate forms with user information it can retrieve and as specified by the authorized web administrator (e.g. bank information may not be approved to be pre-populated)												
334			1		12.17	For service requests requiring field visits, the system shall require the user to specify access information (e.g. meter is accessible, no dogs, no safety issues, etc) and shall provide hyperlink to Rule 16 content.												
335			1		12.20	The system shall have the capability to save the user's personalization and eligibility information to the user's profile if the user is logged in.												
336			1		12.30	The system shall have the capability to allow the user to choose which type of customer they want to be classified as if the user is a customer of multiple different customer types (i.e. customer has both residential and commercial accounts)												
337			1		12.35	The system shall have a “save” function so that the user may save an incomplete form and return to complete the form at a later time												
338			1		12.40	The system shall have the capability for the user to complete multiple forms/requests during one transaction												
339			1		12.45	The system shall have the capability to handle multiple different requests during one transaction												
340			1		12.50	The system shall have the capability to prompt the user if the user is attempting a duplicate request												
341			1		12.55	The system shall have the capability to provide online help during the form/request process												
342			1		12.60	The system shall allow any user to submit service requests for general services that do not require a customer/account holder authentication (i.e.report an outage)												
343			1		12.65	The system shall provide the user the capability to cancel/modify a request depending on the request status and type												
344			1		12.67	The system shall have the capability to determine that all required information has been provided and has passed any associated validations before the service request can be successfully submitted												
345			1		12.67.05	The system shall display appropriate error messages if information is missing or validations fail												
346			1		12.70	The system shall have the capability to send the user a confirmation number through the user's preferred method for the service request type												
347			1		12.75	The system shall send one confirmation for each transaction submitted (i.e. regardless of how many requests are in each transaction)												
348			1		12.80	The system shall have the ability to track the overall status of a multi-part service request by receiving updates from external sub-systems as sub-service requests are completed												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
349			1		12.85	The system shall allow a user to check the status of the request by entering the confirmation number on a confirmation tracking/status page												
350			1		12.90	The system shall have the capability to provide a hyperlink (which leads to the status of a request) in a confirmation email.												
351			1		12.92	The system shall update the user's service request history whenever a new request has been made to the contract account or service contract(s)												
352			1		12.94	The system shall have the capability for the user to select/view the service request history for a period of time specified by the user												
353			1		12.95	The system shall display only user-initiated requests in the service request history												
354			1		12.96	The system shall prompt the user with up-sell/cross-sell opportunities when completing a move-in service request and in accordance with their opt in/opt out preferences												
355			1		12.97	The system shall have the capability to allow a user to submit a service request for all the services that the Companies would like to provide												
356			1		12.99	The system shall have the capability to send requests to sub-systems to support the service request process												
357			1		12.99.05	When the system sends service requests to supporting sub-systems (e.g. SAP CIS, ADMS, etc), it shall create a log entry that the service request was sent to the sub-system												
363	**Program Enrollment**																	
364	**Program Enrollment: This section describes the capability for a user to enroll in various programs and services offered by HECO**																	
365													Meets	Will	3rd P	Cust	No	Other
366			1		13.05	The system shall enable the user to enroll in programs and services												
367			1		13.10	The system shall enable an authorized web administrator to specify which programs and services require authentication before enrollment can proceed vs. those can be enrolled as a guest												
368			1		13.12	The system shall enable an authorized web administrator to specifiy by account class, rate schedule, or other criteria which programs and services require review by an internal employee before enrollment can be completed (e.g., program enrollment for commercial/industrial accounts may be referred to the assigned representative)												
369			1		13.12.05	If the authorized web administrator has specified that an enrollment must be reviewed by an employee befpre employee before it can be completed, the system shall enable the authorized web administrator to define the actions that should occur (e.g., display message to the user, send event/message to account representative, etc)												
370			1		13.12.05	The system shall enable the authorized web administrator to define, by program/service, eligibility criteria and additional information required to complete enrollment (e.g. acceptance of terms and conditions for the program)												
371			1		13.15	The system shall prompt the user for additional information when beginning enrollment in certain programs that require additional information, including acknowledgement of terms and conditions												
372			1		13.55	The system shall have the capabilty to determine if a program will require an eligibility check.												
373			1		13.60	The system shall have the capability to determine is a user is logged in as a precursor to a program eligibility check.												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
374			1		13.65	The system shall have the capabilty to determine if a user is eligible for a program that they are interested in enrolling in												
375			1		13.70	The system shall have the capability to determine that all required additional information has been provided by and has passed any associated validations before completing enrollment												
376			1		13.72	The system shall provide a review page for the user to confirm the programs and services they have chosen												
377			1		13.72	The system shall have the capability on the review page to up-sell programs to the user in accordance with the user's opt-in/opt-out preferences												
378			1		13.73	The system shall provide a confirmation page for the user after the user has submitted their request for program enrollment												
379			1		13.74	The system shall send a confirmation notification to the user in the method they have chosen to receive communications												
380			1		13.75	The system enable the user to check on the status of their enrollment in programs												
381			1		13.80	The system shall have the capability to send requests to sub-systems to support the enrollment process												
387	**Outage Center**																	
388	**Outage Center: This section describes the user's ability to interact with the system to get more information on current and planned outages, to report an outage, etc.**																	
389													Meets	Will	3rd P	Cust	No	Other
390			1		14.05	The system shall provide a link to the Outage Center from the HECO Home page (unauthenticated) and also from the Online Account landing page.												
391			1		14.07	The system will enable the authorized web administrator to set criteria for viewing outage data (e.g. the user must be authenticated, have service in the outage area, etc)												
392			1		14.09	The system shall enable internal users to have views to all outage data												
393			1		14.10	The system shall provide visibility to current outages												
394			1		14.15	The systems shall provide visibility to planned outages												
395			1		14.17	The system shall enable the user to opt in for outage notifications (planned and current) based on their preferred contact method												
396			1		14.20	The systems shall enable the user to report an outage, including attaching a picture/gps coordinates												
397			1		14.25	The system shall allow the user to request an outage ETR for a specific service address												
403	**Green Button**																	
404	**Green Button: This section describes the capability for authenticated users to download interval data via the "Green Button" once they have enrolled in the service**																	
405													Meets	Will	3rd P	Cust	No	Other
406			1		15.05	The system shall enable the user to download interval usage data using a "Green Button"												
407			1		15.10	The system shall require that the user be registered for an Online Account prior to allowing data download												
408			1		15.15	The system shall require that the user has authenticated before allowing data download												
409			1		15.17	The system shall require the user to agree to terms and conditions before allowing data download and shall record acceptance (i.e. that the Company is not responsible if the user provides data to a third party)												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
410			1		15.20	The system shall require the user to meet configurable conditions in order to access the Green Button capability such as: * The user must be authenticated * The user must be the Online Account administrator or have been granted permission by the Online Account administrator * The user has accepted terms and conditions related to data download												
411			1		15.25	The system shall enable the user to access/download up to the most recent 13 months of interval data												
412			1		15.30	The system shall allow the user to enter "*from*" and "*to*" dates within the 13 months if they do not wish to download the entire 13 months												
413			1		15.32	The system shall default the download file to csv format but shall enable the user to choose a different format (e.g. xls, xml)												
414			1		15.35	The system shall enable the user to save the export file to any location they can access												
415			1		15.40	The system shall export the usage data at the lowest recorded level (e.g. 15 minute, hourly)												
416			1		15.43	The system shall have the capability to export kW data as well as kWh data												
417			1		15.45	The system shall group the consumption data by day, month and year (e.g., starting at 00 to 24 hours for each day in the month, from day 1 to month end and then by year)												
418			1		15.50	The system shall not summarize exported usage data												
419			1		15.60	The system shall include the premise address in the export file.												
420			1		15.65	The system shall include all usage data available, including actual and estimated data, in the export file												
421			1		15.70	If estimated data is included in the export file, the system shall include an indicator that the data is estimated												
422			1		15.75	The system shall provide billing and/or pricing data available within the MDMS and as required by Green Button standards												
423			1		15.80	The system shall not provide customer non-public information, meter events, alarms, register reads, or non-electric commodities in the export file												
424			1		15.85	The system shall not encrypt the exported data.												
430	**Mobile Devices**																	
431	**Mobile Devices: This section describes features specific to mobile devices.**																	
432													Meets	Will	3rd P	Cust	No	Other
433	1				16.05	The system shall have the capability through a mobile device to use a Bar Code Application to take a snapshot of the invoice barcode to facilitate registration and for personalization settings through a mobile device.												
434		1			16.10	The system shall have the capability through a mobile device to use a Bar Code Application to take a snapshot of the bar code on meter, pair with mobile device, obtain usage data, and for personalization settings (e.g. to facilitate registration, etc)												
435			1		16.15	If the Contract account contains numerous service contracts, the system shall have the capability to display data in a condensed form through a mobile device.												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
436			1		16.20	The system shall have the capability to use the user's GPS coordinates to centralize the outage map once the user has authenticated												
437			1		16.25	The system shall have the capability for the user to use GPS location to report an outage through a mobile device.												
438			1		16.35	The system shall have the capability to recognize users who visit the HECO mobile presence via their mobile device so that a personalized experience can be provided based upon the knowledge that we have of the user.												
439			1		16.40	The system shall have the capability to generate customized content for display on mobile devices												
440			1		16.45	The system shall have the capability for users to locate payment locations/local offices via their mobile device GPS functionality												
441				1	16.47	The system shall NOT override the GPS setting that the user has set on their mobile device (i.e. do not override disablement of location services)												
442			1		16.50	Under the contact us menu option, the system shall display contact numbers so that mobile devices (which have the ability to do this) can dial directly from the listing.												
448	**Reporting and Analytics**																	
449	**Reporting and Analytics: This section describes reports that the system will generate on a regular or ad-hoc basis, as requested by an authorized web administrator. The purpose of these reports is to facilitate the company's understanding of the use of the system.**																	
450													Meets	Will	3rd P	Cust	No	Other
451			1		17.05	The system shall provide a website reporting and analytics capability												
452			1		17.10	The system shall provide an analytics/reporting dashhboard for use by the authorized web administrator and authorized internal users to define and view analytics and reports												
453			1		17.15	The system shall create all reports and analytics in aggregate unless otherwise specified (i.e. no analytics/reports at the individual userid level)												
454			1		17.15.05	The system shall enable analytics/reporting at userid level for internal users												
455			1		17.20	The website reporting and analytics tool shall allow the authorized web admistrator to identify the data to be tracked (e.g.,don't track ip address)												
456			1		17.25	The system shall enable the authorized web administrator to define various criteria/attributes for analytics/reporting (e.g., customer segment, internal userids vs. external userids, rate schedule, AMI vs. non-AMI, location, account type (i.e. residential, business, commercial/industrial))												
457			1		17.30	The system shall ensure that all reports and analytics comply with the Company's privacy policies												
458			1		17.35	The system shall be able to integrate analytics from other sources (e.g. Google analytics, Omniture, etc)												
459			1		17.40	The system shall be able to identify userid's that have not had activity in a configurable number of days and shall enable the authorized web administrator to define reports based on the this criteria (e.g., track data for "active" vs. "inactive" userid's)												
460			1		17.42	The system shall track activity and inactivity of the customers in a separate reporting tool (not tied to analytics) to help determine future campaign and messaging to those customers. This should comply with existing privacy policy rules												
461			1		17.45	The system shall provide all reports based on timeframes as requested by an authorized web administrator and will include: daily, weekly, monthly, annual, or customized start/end dates.												

	A	B	C	D	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
462			1		17.50	The system shall provide various analytics/reports addressing site visits including but not limited to: * average visit time * number of visitors within specified time frame * new visitors vs. return visitors * duration of session per visit per visitor * type of device the visitor used to access the site * characteristics of the device including hardware, OS, browser type, etc * number of pages viewed over time * most frequently viewed pages * length of time spent on a page * length of time of the session/visit * most common path used on the site * how visitor arrived at the site * where visitor is leaving the site * where visitor is abandoning the site * visitor path of previous page and next page * entire visitor step-by step-path												
463			1		17.55	The system shall provide various analytics/reports addressing transactions including but not limited to: * the types of transactions started * the types of transactions completed * the types of transactions abandoned * by customer segment/account type by transactions started/completed/abandoned												
464			1		17.60	The system shall proivde a report on the length of time it takes to load a given page.												
465			1		17.65	The system shall track customer actions within the portal such as but not limited to downloading files and clicking on promotional banners.												

	A	B	C	D	E	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
1	**Hawaiian Electric Project Assessment Questionnaire**													**Vendor Response Options**					
2	**Customer Facing Solutions**													**XYZ, Inc.**					
3							Vendor Name:	XYZ, Inc.											
4							Project:	Customer Facing Solutions						Spreadsheet Template Version is:					
5							Date Questionnaire Released:	03/27/15											
6							Date Questionnaire Due:	04/24/15						2.0 as of 01/20/2015					
7							Date of Last Assessment Ratings Added by HE:	01/20/15											
8	Information Only	Ideal	Core	Mandatory	Hide this Col. It Chks for 0		**Hawaiian Electric Smart Grid Customer Facing Solutions Technology Requirements**	Enter the numeric value "1" (not text) as the flag values in the yellow highlighted response options. Do not flag more than 1 (one) box per row. Use Grouping controls on far left side of this spreadsheet to fully open all text and response options. Use beige areas in expanded rows to enter any desired hyperlinks or additional explanation text.						System as Proposed Meets Standard	System will meet standard in scheduled upcoming release	System can meet standard using 3rd Party products	System can meet standard with cusomization	System as proposed does not meet standard	Other
17	**Audit Trail (web administrator transactional)**																		
18																			
19														Meets	Will	3rd P	Cust	No	Other
20			1		0	5.05	The product shall log all changes made by the authorized web administrator and shall make the transactional log available to authorized internal users												
26	**Performance, Scalability and High Availability Requirements**																		
27																			
28														Meets	Will	3rd P	Cust	No	Other
29			1		0	6.02	The product shall be scalable to handle 500,000 concurrent users while meeting response time goals												
30			1		0	6.04	The product shall be scalable to handle 2.5 million total users												
31			1		0	6.10	The product shall be scalable to handle 4.8 million to 1.5 billion interval data points												
32			1		0	6.60	The product shall support load balancing in a clustered environment without additional software components												
33			1		0	6.67	The system shall have failover capability												
34	1				0	6.69	The system shall have failover capability to geographically separate locations												
35			1		0	6.70	The product shall enable summarization and consolidation of health and performance metrics based on user-defined time increments (i.e. hourly, peak-hour, daily, weekly, monthly, yearly).												
41	**Integration Requirements**																		
42																			
43														Meets	Will	3rd P	Cust	No	Other
44			1		0	7.20	The product shall be able to provide traffic/visitor data to externally available analytics products												
45			1		0	7.25	The product shall be able to integrate with Ingeniux Content Management System												
46			1		0	7.30	The product shall integrate with external enterprise feedback tools (survey tools)												
47					0	7.00	Definition: An Identity Management Access (IAM) system is a framework for business processes that facilitates the management of electronic identities. The framework includes the technology needed to support identity management. IAM technology can be used to initiate, capture, record and manage user identities and their related access permissions in an automated fashion. This ensures that access privileges are granted according to oe interpretation of policy and all individuals and services are properly authenticated, authorized, and audited.												
48			1		0	7.45	The product shall have an out-of-the-box Search capability												
49			1		0	7.55	The product shall integrate with contact center platforms including Genesys, AVAYA, and Mitel												
50			1		0	7.90	The product shall integrate with Call Center Queuing systems like Genesys, Avaya, and Mitel												

	A	B	C	D	E	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
51			1		0	7.60	The product shall support Single-sign-on to maintain a seamless user experience across CMS and the customer portal												
52			1		0	7.65	The product shall integrate with SAP ISU CRM/CRB												
53			1		0	7.75	The product shall support mobile communications/notifications.												
54			1		0	7.80	The system shall integrate with social networking sites like Instagram and Facebook												
55			1		0	7.85	The product shall integrate with external alerting and notification system engines (i.e. Varolli, Televox)												
61	**Application Requirements**																		
62																			
63														Meets	Will	3rd P	Cust	No	Other
64			1		0	8.06	The system, if directly offering to process credit and debit card payments, shall be certified and shall maintain PCI Compliance												
65			1		0	8.09	The system shall encrypt all Personally Identifiable Information (PII) commonly covered by data privacy laws both in transit and at rest (these are Social Security Number, driver's license, and financial account numbers)												
66			1		0	8.11	The system shall mask in display Social Security Number and financial account numbers based on configuration of the system's user roles.												
67			1		0	8.12	The product shall be able to accept standard CSS from the CMS (Ingeniux)												
68			1		0	8.20	The UI shall be customizable by the authorized web administrator via use of portlets, drag and drop, etc												
69			1		0	8.35	The product shall have globalization features such as support for multiple languages and multi-code character sets												
70			1		0	8.37	All pages must meet the Web Content Accessibility Guidelines (WCAG) WCAG 2.0, Level AA guidelines for Operable content, which includes the following top-level guidelines: 2.1 Make all functionality available from a keyboard; 2.2 Provide users with disabilities enough time to read and use content; 2.3 Do not design content in a way that is known to cause seizures; 2.4 Provide ways to help users with disabilities navigate, find content and determine where they are (The details of the Level AA compliance are defined in the WCAG 2.0 standards under section 2, Operable)												
71			1		0	8.38	All pages must meet the Web Content Accessibility Guidelines (WCAG) WCAG 2.0, Level AA guidelines for Robust content, which includes the following top-level guideline: 4.1 Maximize compatibility with current and future user agents, including assistive technologies (The details of the Level AA compliance are defined in the WCAG 2.0 standards under section 4, Robust)												
72			1		0	8.39	All pages must meet the Web Content Accessibility Guidelines (WCAG) WCAG 2.0, Level AA guidelines for Understandable content, which includes the following top-level guidelines: 3.1 Make text content readable and understandable; 3.2 Make Web pages appear and operate in predictable ways; 3.3. Help users avoid and correct mistakes (The details of the Level AA compliance are defined in the WCAG 2.0 standards under section 3, Understandable)												
73			1		0	8.40	The product shall include a robust Web Analytics capability												
74			1		0	8.45	The product shall integrate with the Ingeniux CMS search capability												
80	**Security Requirements**																		
81																			
82														Meets	Will	3rd P	Cust	No	Other

	A	B	C	D	E	F	G	J	K	L	M	N	O	P	Q	R	S	T	U
83					0	10.00	Definition: Identity Management: The combination of business process and technology used to manage data on IT systems and applications about users. Managed data includes user objects, identity attributes, security entitlements and authentication factors.												
84					0	10.00	Definition: Authentication: The process of identifying an individual, usually based on a username and password. Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual.												
85					0	10.00	Definition: Access Management (e.g. Alert Enterprise): Access management is the process of granting authorized users the right to use a service, while preventing access to non-authorized users.												
86			1		0	10.43	The product shall not use super cookies, perma cookies, or ever cookies, or any mechanism that circumvents the users browser privacy settings												
87			1		0	10.46	The product shall ensure that session cookies containing authentication/authorization information are non-persistent; they must be cached in memory and be deleted when the browser is closed.												
88			1		0	10.47	The product shall use HTTPS to secure all post-authentication transactional data throughout the site												
89			1		0	10.49	Describe the products internal capabilities for identity/access management and authentication												
90			1		0	10.50	Describe external identity/access management systems that the product integrates with (management of userids and pw, authentication, and access to functions/capabilities)												
91			1		0	10.55	The system shall support Security Assertion Markup Language (SAML) Version 2.0 ADFS to facilitate customer authentication among the various customer-accessible applications in the HE environment.												
97	**Web Development Standards**																		
98																			
99														Meets	Will	3rd P	Cust	No	Other
100			1		0	12.05	The product shall use HTML and CSS as the fundamental technologies for building Web pages: HTML (html and xhtml) for structure, CSS for style and layout, including WebFonts.												
101	1				0	12.10	The product shall use Cross-browser HTML 5 (preferred standard)												
102			1		0	12.15	The product shall use JavaScript Web APIs:Standard APIs for client-side Web Application development include those for Geolocation, XMLHttpRequest, and mobile widgets.												
103	1				0	12.20	The product shall use PNG raster format, SVG vector format, and the Canvas API for Graphics												
104	1				0	12.25	Tthe product shall use HTML, SVG, and SMIL (for synchronization) for authoring audio and video presentations												

Appendix D – General Technology and Cybersecurity Requirements

Appendix D contains general technology, cybersecurity and privacy requirements that are applied across all technologies employed at The Companies. These represent the specific compliance requirements that need to be met in order to maintain the required standards at The Companies. Bidders are required to complete the spreadsheet per instructions on the "INSTRUCTIONS" tab and return the electronic file with the Bidder's proposal response.

See electronic file called "Appendix D – General Technology and Cybersecurity Requirements.xlsx".

Hawaiian Electric Technology Assessment Questionnaire Project name						Vendor Response Options XYZ, Inc.					
Information Only	Ideal	Core	Mandatory	**Hawaiian Electric Technology Standards**	Enter the numeric value "1" (not text) as the flag values in the yellow highlighted response options. Do not flag more than 1 (one) box per row. Use Grouping controls on far left side of this spreadsheet to fully open all text and response options. Use beige areas in expanded rows to enter any desired hyperlinks or additional explanation text.	System as Proposed Meets Standard	System will meet standard in scheduled upcoming release	System can meet standard using 3rd Party products	System can meet standard with customization	System as proposed does not meet standard	Other
Data and Database Architecture											
				Data Architecture (or Data Object Architecture)		Meets	Will	3rd P	Cust	No	Other
		1		***Data Object Model***							
	1			***Logical Data Model***							
	1			***Physical Data Model***							
				Data Management		Meets	Will	3rd P	Cust	No	Other
		1		***Data Access Utility***							
		1		***Data Import/Export Support***							
		1		***Extract/Transfer/Load (ETL) Capability***							
		1		***Adherence to Data Labeling and Handling Requirements***							
				Web Content Management Architecture		Meets	Will	3rd P	Cust	No	Other
		1		***Web Data Management Utility***							
		1		***Web Content Management Utility***							
				Database Architecture		Meets	Will	3rd P	Cust	No	Other
		1		***ODBC Compliance***							
		1		***JDBC Compliance***							
	1			***OLEDB Compliance***							
		1		***SQL Data Access Compliance***							
	1			***Use of HE Standard Database***							
1				***Use of Alternate Databases***							

Application Architecture												
Development Environment					Meets	Will	3rd P	Cust	No	Other		
	1			*Mainstream Integrated Development Environment*								
	1			*Programmatic Interface for Accessing/Modifying System Information.*								
	1			*Mainstream Development Language*								
	1			*Programming Model*								
1				*Use of Plain Text Configuration or GUI Configuration*								
	1			*Preservation of Customization*								
Training and Progression of Environment					Meets	Will	3rd P	Cust	No	Other		
	1			*Testing Cycles*								
	1			*Developer Testing Framework*								
	1			*User & Performance Testing Framework*								
	1			*Change and Defect Management*								
	1			*Enablement and Use of Event Logs for Error Tracking and Debugging*								
	1			*Multiple Separate but Consistent Environments*								
1				*Use of Virtual Server Environment for Multiple Environments*								
	1			*Straightforward Production Deployment*								
	1			*Version Consistency among Environments*								
Componentization and Service Oriented Architecture (SOA) Support					Meets	Will	3rd P	Cust	No	Other		
	1			*N-Tier Application Architecture*								
		1		*Data Tier Separation*								
	1			*No Storage/ Maintenance of Data on Web Servers*								
	1			*Segregation of Reporting Services*								
	1			*Substantial to Full Separation of the Presentation Layer*								
1				*Application Function Componentization*								
1				*WSDL or WADL Enabled*								
1				*WSFL Enabled*								
	1			*SOAP or REST Enabled*								
1				*UDDI Enabled*								
1				*Service Choreography*								

Integration Architecture											
Integration Capabilities				Meets	Will	3rd P	Cust	No	Other		
	1		***API Extensiveness/Flexibility***								
	1		***Integration with Websphere MQ and Message Broker***								
1			***Native XML Support***								
	1		***XML Compatibility***								
1			***Integration at the Web Services Layer***								
1			***Integration with OData***								
	1		***Integration ETL Tools***								
Interoperability with Key Services Important to HE				Meets	Will	3rd P	Cust	No	Other		
	1		***Interoperability with MS Exchange***								
1			***Interoperability with SAP Business Objects***								
User Interface (UI) Standards – Cross Platform				Meets	Will	3rd P	Cust	No	Other		
	1		***Windows based Web Browser Compatibility – Internal Use***								
	1		***Extended Web Browser Compatibility – Internal Use***								
	1		***General Web Browser Compatibility – External Use***								
1			***Full Enablement of UI via Browser (without Terminal Services)***								
1			***Web Portal Enablement for External Use***								
User Interface (UI) Standards - Windows				Meets	Will	3rd P	Cust	No	Other		
	1		***Use of Windows 7 Browsers for Presentation***								

Technology Architecture													
				Server Platforms			Meets	Will	3rd P	Cust	No	Other
		1		***Application Server Platform***								
		1		***Use of MS IIS as Web Server Platform***								
				Scalability and Performance			Meets	Will	3rd P	Cust	No	Other
1				***Vertical Scalability***								
		1		***Horizontal Scalability***								
		1		***Cluster Awareness***								
		1		***Manual Failover Procedures***								
		1		***Semi Automated Failover Protection***								
		1		***Unattended High Availability Failover Protection***								
	1			***Response Time Performance – Internal Network***								
	1			***Response Time Performance – External Facing***								
				Network/Communication Architecture			Meets	Will	3rd P	Cust	No	Other
		1		***TCP/IP Network Transport Protocol***								
		1		***HTTP and HTTPS Data Transport Protocols***								

				System Operation, Management and Support Architecture								
				System Operation and Management		Meets	Will	3rd P	Cust	No	Other
		1		***Capability to Run in Virtual Environment***							
		1		***Compatibility with Storage Area Network (SAN)***							
	1			***Compatibility with Native Fiber Channel for SAN Management***							
		1		***Compatibility with On-Line Back-up and Restore Functions***							
		1		***Compatibility with System Configuration Management software***							
		1		***Patch Level Compatibility***							
		1		***System Management Utilities***							
1				***Compatibility with Application Performance Management (APM)***							
		1		***Low Intervention Maintenance Requirements***							
1				***Service Lifecycle and Upgrade Schedules***							
				System Support		Meets	Will	3rd P	Cust	No	Other
1				***Remote Support Capability and Access***							
1				***Service Level Agreements***							

Security and Privacy Architecture												
User Access Management					Meets	Will	3rd P	Cust	No	Other		
		1		*Authentication and Identification*								
		1		*Use of Integrated Windows Authentication for Web Services*								
		1		*LDAP Integration*								
		1		*Internal and External Password Management*								
			1	*Customer Privacy Settings- Web*								
			1	*Customer Privacy Settings-Mobile*								
		1		*Confirmation of Customer Privacy Settings-Mobile*								
		1		*Single Sign-On (SSO) Enabled*								
		1		*Removal of Generic Accounts*								
		1		*Multi-level Access Control*								
		1		*Task or Role Based Access Control*								
		1		*Task or Role Based Data Import/Export Control*								
Software and Services					Meets	Will	3rd P	Cust	No	Other		
		1		*Removal of Unnecessary Software*								
		1		*Disable non-required services and ports*								
		1		*Version/Patch utility*								
Connection and Data Transport Security					Meets	Will	3rd P	Cust	No	Other		
			1	*Web browser session protection*								
		1		*SSH File Transfer Protocol*								
		1		*Inter-process Communication*								
			1	*Secure Transport of Company non-Public Data*								
		1		*Network Security Zones*								
			1	*Wireless Technology*								
			1	*Network Intrusion Detection*								
Data Storage Security					Meets	Will	3rd P	Cust	No	Other		
		1		*Elimination of 'Cached' Data*								
			1	*Secure Storage of Company "Confidential-Restricted" Data At Rest.*								
Behavior Based Security Controls					Meets	Will	3rd P	Cust	No	Other		
		1		*Session Termination for Inactivity*								
		1		*Limit Concurrent Sessions for Same User*								
		1		*Lock Out after Unsuccessful Log-On Attempts*								
Audit, Alert and Reporting Safeguards					Meets	Will	3rd P	Cust	No	Other		
		1		*Real-Time Inventory of Users*								
			1	*Audit History of Access and Changes*								
			1	*Customizable Audit Logging and Reports*								
	1			*User Alert Regarding Prior Log-On*								
System Integrity Assurance					Meets	Will	3rd P	Cust	No	Other		
	1			*Resistance to Denial of Service*								
			1	*Protection via Security Devices*								
			1	*Malware and Virus Protection*								
		1		*System Heartbeat Monitoring*								
Privacy Compliance					Meets	Will	3rd P	Cust	No	Other		
		1		*Customer Data Purging*								
		1		*Customer Communications Preference*								
			1	*Customer Opt-out*								
			1	*Customer Data Control*								
	1			*Customer Authentication*								
Security Compliance					Meets	Will	3rd P	Cust	No	Other		
			1	*System Backup*								
	1			*Encryption Key Exchange*								
			1	*Cryptographic System*								
		1		*Interactive Remote Access*								
			1	*OWASP Top Ten*								
			1	*Cyber Asset Reuse and Disposal*								
			1	*Configuration Change Management*								
			1	*Vulnerability Assessments*								
			1	*Systems Security Management*								
		1		*Employee Mobile Device Applications*								
			1	*Masking of Sensitive Data*								
Process Requirements					Meets	Will	3rd P	Cust	No	Other		
			1	*Vendor Support Access*								
		1		*Patches and Updates*								
			1	*Protection of Audit Logs*								
		1		*Incident Response Policy*								
1				*Security Built into Life Cycle QA*								
			1	*Data Return Compliance*								
		1		*Data Confidentiality and Company Privacy Policy*								
			1	*Company Compliance Program*								

		1		***Internet Domain Name Registration***								
		1		***System Interfaces***								

Remote Host and Application Service Provider (ASP) Architecture (IF APPLICABLE)											
	Remote Security				Meets	Will	3rd P	Cust	No	Other
	1		***Determination of Security Trust Level***							
	1		***Data Preservation Provisions***							
	1		***System Access & Performance Requirements***							

Appendix E – Detailed Cost and Staffing Model

Appendix E contains the specific spreadsheet file that is required to be completed for each implementation scenario, and returned as part of the bidder's proposal response.

For each of the corresponding implementation scenarios (base and alternatives), please provide the corresponding separate detail cost and staffing model spreadsheets.

See electronic file called "Appendix E – Detailed Cost and Staffing Model.xlsx".

Appendix E: Detailed Cost and Staffing Model

Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Customer Facing Solutions Project, RFP No. 031915-07
Base Costs

Summary of Costs						
TOTAL LABOR COST (000's)	**Project Prep/ Planning**	**Blueprint/ Requirements**	**Realization/ Development**	**Final Prep**	**Post Go-Live**	**Total**
SERVICES: POTENTIAL SUPPLIER AND SUB-CONTRACTOR						
Project Management Fees						$ -
Functional Fees (Analysis and Remediation Support)						$ -
Technical Fees (Analysis & Remediation)						$ -
Technical Fees (Development, Reporting & Infrastructure)						$ -
Testing Fees (Unit, Integration, System, Regression, UAT Support)						$ -
Testing Fees (Performance and Stres)						$ -
Testing Fees (Privacy and Security)						$ -
Training Fees						$ -
Training Option 1						$ -
Training Option 2						$ -
All Other OCM activities						$ -
Other Fees (Please identify; add additional lines as needed)						$ -
Total Potential Supplier Labor Fees	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Estimated Expenses						
Total Potential Supplier Labor Fees & Expenses	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Sub-Contractor Labor Cost						
Project Management Fees						$ -
Functional Fees (Analysis and Remediation Support)						$ -
Technical Fees (Analysis & Remediation)						$ -
Technical Fees (Development & Infrastructure)						$ -
Testing Fees (Unit, Integration, System, Regression, UAT Support)						$ -
Testing Fees (Performance and Stres)						$ -
Testing Fees (Privacy and Security)						$ -
Training Fees						$ -
Training Option 1						$ -
Training Option 2						$ -
All Other OCM activities						$ -
Other Fees (Please identify; add additional lines as needed)						$ -
Total Sub-Contractor Labor Fees	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Estimated Sub-Contractor Expenses						
Total Potential Supplier Labor Fees & Expenses	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
TOTAL LABOR FEES & EXPENSES	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Appendix E: Detailed Cost and Staffing Model

Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Customer Facing Solutions Project, RFP No. 031915-07
Base Costs

Summary of Costs						
RATES: POTENTIAL SUPPLIER AND SUB-CONTRACTOR						
Potential Supplier Blended Hourly Rate						
Resource Hourly Rate						
< repeat for each resource >						
Sub-Contractor Blended Hourly Rate						
Resource Hourly Rate						
< repeat for each resource >						
PROJECT TIMELINE						
DURATION (Weeks)						
LEVEL OF EFFORT: POTENTIAL SUPPLIER AND SUB-CONTRACTOR						
Total Potential Supplier Hours						
Onsite Resource Hours						
Offshore Resource Hours						
Total Sub-Contractor Hours						
Onsite Resource Hours						
Offshore Resource Hours						
TOTAL PROJECT HOURS: POTENTIAL SUPPLIER AND SUBCONTRACTOR	**0**	**0**	**0**	**0**	**0**	**0**
LEVEL OF EFFORT: THE COMPANIES						
< state per expected role >						
< state per expected role >						
TOTAL PROJECT HOURS: THE COMPANIES	**0**	**0**	**0**	**0**	**0**	**0**

Appendix E: Detailed Cost and Staffing Model

Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Customer Facing Solutions Project, RFP No. 031915-07
Base Costs

Summary of Costs						
SOFTWARE COST (000's)						
OPTION 1: 1 YEAR MAINTENANCE AGREEMENT	**Year 1**					**Total**
Software License Fees						$ -
Software Upgrade Fees						$ -
Software Maintenance Agreement Fees						$ -
Interface Adaptor License Fees (if not included above)						$ -
Interface Adaptor Upgrade Fees (if not included above)						$ -
Interface Adaptor Maintenance Agreement Fees (if not included above)						$ -
Additional Software Products (non-Supplier) required for the system						$ -
Software Product Name/Version < repeat for each software product >						$ -
Software License Fees < repeat for each software product >						$ -
Software Upgrade Fees < repeat for each software product >						$ -
Software Maintenance Agreement Fees < repeat for each software product >						$ -
Documentation Fees						$ -
OPTION 2: 3 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**			**Total**
Software License Fees						$ -
Software Upgrade Fees						$ -
Software Maintenance Agreement Fees						$ -
Interface Adaptor License Fees (if not included above)						$ -
Interface Adaptor Upgrade Fees (if not included above)						$ -
Interface Adaptor Maintenance Agreement Fees (if not included above)						$ -
Additional Software Products (non-Supplier) required for the system						$ -
Software Product Name/Version < repeat for each software product >						$ -
Software License Fees < repeat for each software product >						$ -
Software Upgrade Fees < repeat for each software product >						$ -
Software Maintenance Agreement Fees < repeat for each software product >						$ -
Documentation Fees						$ -
OPTION 3: 5 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Software License Fees						$ -
Software Upgrade Fees						$ -
Software Maintenance Agreement Fees						$ -
Interface Adaptor License Fees (if not included above)						$ -
Interface Adaptor Upgrade Fees (if not included above)						$ -
Interface Adaptor Maintenance Agreement Fees (if not included above)						$ -
Additional Software Products (non-Supplier) required for the system						$ -
Software Product Name/Version < repeat for each software product >						$ -
Software License Fees < repeat for each software product >						$ -
Software Upgrade Fees < repeat for each software product >						$ -

Appendix E: Detailed Cost and Staffing Model

Vendor: VENDOR NAME

Hawaiian Electric Company, Inc.

Customer Facing Solutions Project, RFP No. 031915-07

Base Costs

Summary of Costs						
Software Maintenance Agreement Fees < repeat for each software product >						$ -
Documentation Fees						$ -

Appendix E: Detailed Cost and Staffing Model

Vendor: VENDOR NAME
Hawaiian Electric Company, Inc.
Customer Facing Solutions Project, RFP No. 031915-07
Base Costs

Summary of Costs						
HARDWARE COST (000's)						
OPTION 1: 1 YEAR MAINTENANCE AGREEMENT	**Year 1**					**Total**
Hardware required for the system						$ -
Hardware Name/Version < repeat for each hardware product >						$ -
Hardware Initial Cost < repeat for each hardware product >						$ -
Hardware Growth < repeat for each hardware product >						$ -
Hardware Maintenance Fees < repeat for each hardware product >						$ -
OPTION 2: 3 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**			**Total**
Hardware required for the system						$ -
Hardware Name/Version < repeat for each hardware product >						$ -
Hardware Initial Cost < repeat for each hardware product >						$ -
Hardware Growth < repeat for each hardware product >						$ -
Hardware Maintenance Fees < repeat for each hardware product >						$ -
OPTION 3: 5 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Hardware required for the system						$ -
Hardware Name/Version < repeat for each hardware product >						$ -
Hardware Initial Cost < repeat for each hardware product >						$ -
Hardware Growth < repeat for each hardware product >						$ -
Hardware Maintenance Fees < repeat for each hardware product >						$ -
HOSTED SERVICES COST (000's) (IF HOSTED ALTERNATIVE PROVIDED)						
OPTION 1: 1 YEAR MAINTENANCE AGREEMENT	**Year 1**					**Total**
Hosting Setup Fees						$ -
Hosting Base Configuration Fees						$ -
Hosting Service Fees						$ -
Hosting Support Fees						$ -
OPTION 2: 3 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**			**Total**
Hosting Setup Fees						$ -
Hosting Base Configuration Fees						$ -
Hosting Service Fees						$ -
Hosting Support Fees						$ -
OPTION 3: 5 YEAR MAINTENANCE AGREEMENT	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Hosting Setup Fees						$ -
Hosting Base Configuration Fees						$ -
Hosting Service Fees						$ -

Appendix E: Detailed Cost and Staffing Model

Vendor: VENDOR NAME

Hawaiian Electric Company, Inc.

Customer Facing Solutions Project, RFP No. 031915-07

Base Costs

Summary of Costs						
Hosting Support Fees						$ -

Appendix F – EPMO Standards and Sample Templates

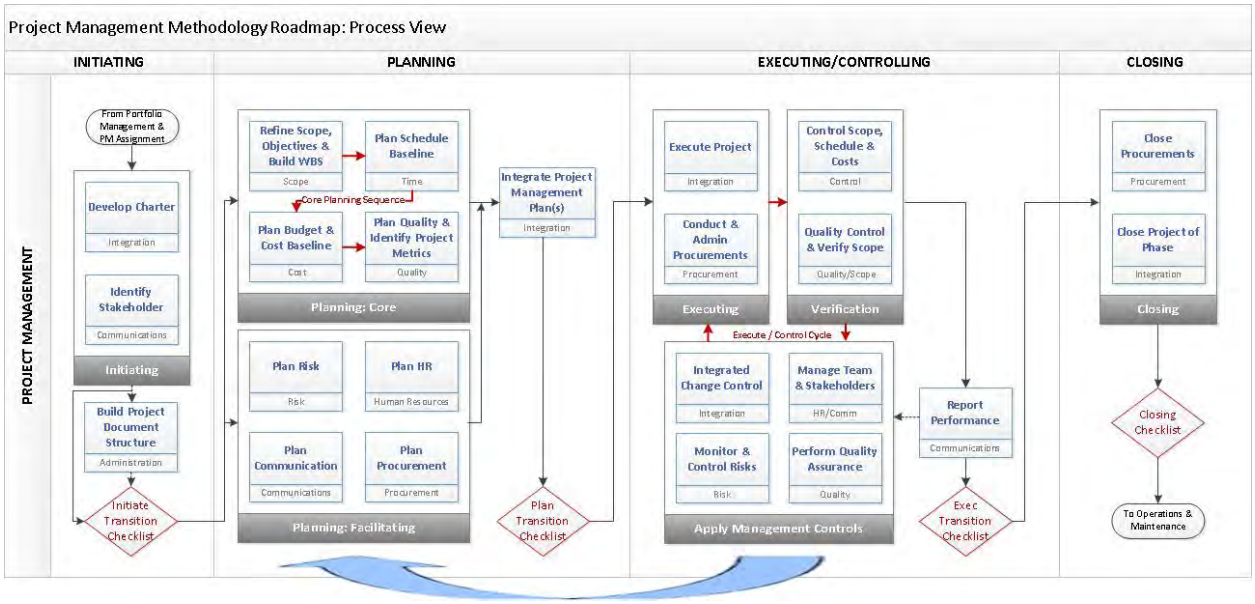
Appendix F contains the primary Enterprise Project Management Office standards and same templates as a reference for expectations per the level of required project management artifacts related to this implementation.

See electronic document called "Appendix F - EPMO Standards and Sample Templates.docx".

The following components from the HECO EPMO will be reviewed and adjusted as needed per collaborative agreements made between both parties in the project management phase. Note that for this Project many of the templates will be systematized in Solution Manager. This document is provided purely as a sampling of EPMO standards. The full EPMO standards are housed in HECO's online PM Resource Center.

High Level Project Management Methodology

The EPMO Project Methodology is based on the Project Management Institute (PMI) PM Book Of Knowledge (collectively referred to as the HECO PMBOK). This framework is specifically adjusted to fit the HECO business model and current organization capability maturity level. Below is the high level general process cycle for the applied project management methodology:



Project Charter

The following template is the current HECO Project Charter template version to be used for recording and obtaining overall project initiation approval.

Contents

PROJECT IDENTIFICATION 1
PROJECT OVERVIEW 1
STRATEGIC GOALS / INITIATIVE 2
PROJECT GOVERNANCE 2
INITIAL RISK ASSESSMENT 3
PROJECT MAJOR MILESTONES & DELIVERABLES 3
PROJECT BUDGET 3
MAJOR STAKEHOLDERS 4
LABOR RESOURCE EXPECTATIONS 4
OTHER NOTES 4
APPROVALS 5

PROJECT IDENTIFICATION

Project Name	Project Number

Project Description *Describe the project in one paragraph with one to four sentences*

Project Sponsor	Title	Project Sponsor Representative	Title

Project Manager	Target In Service Date

Company (HECO, HELCO, MECO)	Responsible Process Area

PROJECT OVERVIEW

Current Situation *Important Historical Background and "As-is" situation*

Proposed Solution *Describe the "To Be" situation – What the project will deliver; the solution to the functional/operating need.*

Project Assumptions
•

PROJECT OVERVIEW

Project Constraints

-

Project Scope and Description
EXECUTIVE SUMMARY OF PURPOSE AND FUNCTION

Out of Scope

STRATEGIC GOALS / INITIATIVE

Describe the specific Strategic goals that this project is aligned to.

Aligned with the following goals and objectives of Hawaiian Electric's "Embracing Change" strategy.

-
-
-

PROJECT GOVERNANCE

The Project shall be governed in compliance with existing policies, processes, and procedures. Outline the decision rights / authority of the Executive Steering Group (if any), the Sponsor, the Sponsor Rep (if any) and the Project Manager.

Executive Steering Group (if applicable to the project) **Level**

-
-

Sponsor Level

-
-

Sponsor Rep (if applicable to the project) **Level**

-
-

Project Manager Level

-
-

INITIAL RISK ASSESSMENT

Major Risks with High Impact and Medium/High Probability

Project Internal Risks (in Scope, Design, Labor Resources, Cost, Schedule)
▪
▪
External Risks (such as Regulatory, Permitting, Community Considerations and other Inter-dependencies)
▪
▪

PROJECT MAJOR MILESTONES & DELIVERABLES

Indicate the major deliverables

Project Definition and Description	**Deliverables**
▪	▪
▪	▪
▪	▪
▪	▪
▪	▪
▪	▪

PROJECT BUDGET

Overview of estimated costs by project.. Projects are not empowered to spend funds until appropriate policies and procedures have been followed and the funds are authorized. The authorized amounts may vary significantly from the estimates below.

PUC Expectations and Recovery of Costs

Project / Category	**Estimated Costs**
Total	

MAJOR STAKEHOLDERS

Major groups which may be involved in, affected by, or show an interest in the project.

-

LABOR RESOURCE EXPECTATIONS

Labor resource plan (i.e. internal, external, billable) as well as anticipated issues/conflicts

-

OTHER NOTES

Other References or Pertinent Information not included above

-

APPROVALS			
Name	**Project Title**	**Date**	**Signature**
	Project Sponsor		
	Project Sponsor Rep.		
	Project Manager		

Integrated Project Plan

The following template is the current HECO Integrated Project Plan template version to be used for the execution of the overall project management plan.

INTEGRATED PROJECT MANAGEMENT PLAN

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1. PROJECT IDENTIFICATION

Project Name	Project Number

Project Description

Describe the project in one paragraph with one to four sentences

32T

Project Manager		Target In-Service Date	
Project Sponsor	**Title**	**Project Sponsor Representative (if any)**	**Title**
Company (HECO, HELCO, MECO)		**Responsible Process Area / Department / Division**	

2. PROJECT OVERVIEW

Background & Current Situation

Summarize the historical background and "as-is" situation in one paragraph.

Project Objectives

Describe the project's objectives.

-
-

Strategic Alignment

Describe what strategic goals will be supported by these project objectives.

-
-

Project Approach & Proposed Solutions

Summarize the proposed project approach and solutions in one paragraph.

3. SCOPE MANAGEMENT

3.1 Project Scope Statement

Describe the scope of the project

☐ The Project Scope Statement is a standalone document. The location address is:

☐ The Project Scope Statement is described below.

Scope Description

Describe the major characteristics of the product or services the project will deliver in one paragraph.

Out of Scope

Call out what will not be included in the scope of the current project or phase to help clarify the boundary of the project scope.

-
-

Project Assumptions

Describe assumptions of the project if any. All assumptions should be verified during the planning process, and reviewed during risk identification.

-
-

Project Constraints

Describe known constraints (e.g. time, budget, regulations, or safety) of the project if any. Known constraints become part of the boundary of the project scope.

-
-

Major Deliverables

Describe the major deliverables or categories of deliverables of the project.

-
-

3.2 SCOPE Management Plan

Describe how the scope of the project will be planned, managed and controlled.

☐ The Scope Management Plan is a standalone document. The location address is:

☐ The Scope Management Plan is described below.

4. TIME MANAGEMENT

4.1 Work Breakdown Structure (WBS)

All the work required to complete the project, including the deliverables and all activities required to produce each deliverable. The approved WBS will become the Scope Baseline of the project.

☐ The WBS is a standalone document. The location address is:

☐ The WBS is described below.

WBS No.	Description
1	
1.1	
1.2	
1.3	
1.4	
2	
2.1	
2.2	
2.3	
2.4	
3	
3.1	
3.2	
3.3	

3.4	
4	
4.1	
4.2	
4.3	

4.2 Schedule

The schedule for all activities and milestones of the project, including the sequence, duration and resources of the activities, in order to produce the project deliverables. The approved Schedule will become the Schedule Baseline of the project.

☐ The Schedule is a standalone document. The location address is:

☐ The Schedule is described below.

WBS No.	WBS Description	Resource Name	Target Start Date	Target End Date	Predecessor WBS No. (if any)	Status	% Complete
1							
1.1							
1.2							
1.3							
1.4							
2							
2.1							
2.2							
2.3							
2.3							
3							
3.1							
3.2							
3.3							
3.4							
4							

4.1							
4.2							
4.3							

4.3 SCHEDULE Management Plan

Describe how the schedule of the project will be developed, managed and controlled.

☐ The Schedule Management Plan is a standalone document. The location address is:

☐ The Schedule Management Plan is described below.

5. COST MANAGEMENT

5.1 COST Management Plan

Describe how the costs and budget of the project are estimated, managed and controlled.

☐ The Cost Management Plan is a standalone document. The location address is:

☐ The Cost Management Plan is described below.

5.2 Cost Estimates and Proposed Budget

Summarize the project cost and budget. The approved Budget will become the Cost Baseline of the project.

☐ The Cost Estimates and Proposed Budget are a standalone document. The location address is:

☐ The Cost Estimates and Proposed Budget are described below.

WBS Category	Estimated Cost ($)	Risk Assessed?	Adjustment for Risk Included?
1 WBS Category Description		☐	☐
2 WBS Category Description		☐	☐
3 WBS Category Description		☐	☐
4 WBS Category Description		☐	☐

		☐	☐
Total Budget			

PUC Expectations and Recovery of Costs

Describe whether PUC approval is required and how the project cost will be recovered

1. RISK MANAGEMENT

1.1 RISK Management Plan

Describe how the risks of the project will be identified, mitigated, monitored and accounted for.

☐ The Risk Management Plan is a standalone document. The location address is:

☐ The Risk Management Plan is described below.

1.2 Risk Register

Document the list of risks that may impact the scope, schedule, cost and quality of the project, and each risk's priority ranking, probability (%), cost or schedule impact, response strategy and any adjustment for risk

☐ The Risk Register is a standalone document. The location address is:

☐ The Risk Register is described below.

Risk Description	Risk Category	Priority Ranking	Risk Response Strategy	Risk Response Included in Scope?	Adjustment for Risk Amount if any
				☐	
				☐	
				☐	
				☐	

2. QUALITY MANAGEMENT

2.1 QUALITY Management Plan

Describe how the quality of the project will be planned, managed and controlled. Include the quality standards and success criteria that will be used to measure the quality, as well as how quality will be built into the process.

☐ The Quality Management Plan is a standalone document. The location address is:

☐ The Quality Management Plan is described below.

Deliverable	Quality Standards and Success Criteria	Quality Control Owner	Quality Control Included in WBS?
			☐
			☐
			☐
			☐

3. HUMAN RESOURCE MANAGEMENT

3.1 HUMAN RESOURCE Plan

Describe how the internal and outside labor resources will be planned, utilized and managed for the project. Also summarize the labor resource needs of the project.

☐ The Human Resource Plan is a standalone document. The location address is:

☐ The Human Resource Plan is described below.

3.2 Roles and Responsibilities Matrix

Define the roles and responsibilities of Project Manager, Sponsor and team members

☐ The Roles and Responsibilities Matrix is a standalone document. The location address is:

☐ The Roles and Responsibilities Matrix is described below.

Role	Description of Responsibilities	Name(s)	Contact Info
Sponsor			
Project Manager			
Sponsor Rep (if any)			
Executive Steering Group (if any)			

3.3 Project Governance and Decision Rights (RACI) Matrix

Define how project decisions will be made by describing what decision rights (Responsible, Approve, Consult, Inform) each role will have.

☐ The Project Governance & RACI Matrix is a standalone document. The location address is:

☐ The Project Governance & RACI Matrix is described below.

For each type of decision, indicate who has the following decision rights, R (Responsible), A (Approve), C (Consult), and I (Inform), as appropriate:

Type of Decision	Sponsor	Project Manager	Sponsor Rep (if any)	Executive Steering Group (if any)	Comments

3.4 Responsibility Assignment Matrix (RAM)

Identify the assignments (Owner, Participant, Expert Resource, Reviewer, Approver) for each activity in the WBS

☐ The Responsibility Assignment Matrix is a standalone document. The location address is:

☐ The Responsibility Assignment Matrix is described below.

For each WBS activity, indicate who has the following assignments, O (Owner), P (Participant), E (Expert Resource), R (Reviewer) and A (Approver), as appropriate:

WBS # and Description	Due Date	Person 1	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7
1 Description								
1.1 Description								
1.2 Description								
1.3 Description								
1.4 Description								
2 Description								
2.1 Description								
2.2								
2.3								
2.4								
3								
3.1								
3.2								
3.3								
3.4								
4								
4.1								
4.2								
4.3								
4.4								

3.5 Project Organizational Chart

Describe all members of the project team and the structure in a graphical format.

☐ The Project Organizational Chart is a standalone document. The location address is:

☐ The Project Organizational Chart is described below.

4. COMMUNICATIONS MANAGEMENT

4.1 Stakeholder Register

Identify all stakeholders who may be negatively or positively impacted by the project, and to whom communication about the project needs to be provided

☐ The Stakeholder Register is a standalone document. The location address is:

☐ The Stakeholder Register is described below.

Stakeholder	How will the stakeholder be impacted by the project	How the stakeholder should be managed and communicated to	Contact Info

4.2 COMMUNICATIONS Management Plan

Describe all project communication events and the 'what', 'to whom', format, 'how often', 'from whom' of each communicate event.

☐ The Communications Plan is a standalone document. The location address is:

☐ The Communications Plan is described below.

Communication Event	To Whom (Stakeholder)	Communication Format	How Often	From Whom

5. PROCUREMENT MANAGEMENT

5.1 PROCUREMENT Management Plan

Identify the areas in the scope where external materials, labor resources or services will be used for the project, and how the procurement of them will be planned, executed and managed.

☐ The Procurement Management Plan is a standalone document. The location address is:

☐ The Procurement Management Plan is described below.

5.2 Links to Other Procurement Documents

Add links to important procurement documents such as Statement of Work or Request for Proposals, as appropriate.

Store the procurement documents in the proper location in the project documentation structure and include the location address to them below. Add more rows to the table as appropriate.

Name of Procurement Document	Location Address

6. CHANGE MANAGEMENT PLAN

Describe how changes to the project Scope, Schedule and Cost Baselines will be monitored, controlled, reviewed and approved. Also describe how project performance and status will be reported.

☐ The Change Management Plan is a standalone document. The location address is:

☐ The Change Management Plan is described below.

7. LINKS TO OTHER PROJECT DOCUMENTS

Add links to any other project documents that should be made part of the Integrated Project Management Plan, as appropriate.

Store the project documents in the proper locations in the project documentation structure and include the location address to them below. Add more rows to the table as appropriate.

Name of Project Document	Location Address

8. APPROVAL SIGNATURES OF INTEGRATED PROJECT MANAGEMENT PLAN

Add more rows to the table as appropriate.

Role	Name	Title	Signature	Date
Project Manager				
Sponsor				

Project Issue Log

The following template is the current HECO Project Issue Log template version for the tracking and documentation of project issues.

Hawaiian Electric Company
Maui Electric Company
Hawaii Electric Light Company

Project Issue Log

Project Name

Issue Status Summary						Issue Information			Requestor			Close Date	
Issue ID	Category	Title (Deliverable)	Owner	Comments & Resolution	Status	WBS #	Issue Description & Impact	Priority	Requestor	Date Created	Date Requested to Close	Date Estimate to Close	Date Actual Close

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Project Change Request

The following template is the current HECO Project Change Request (PCR) template version to be used for the execution of the overall project change requests.

A. General Information

Project Name:	***<Insert Project Name>***		
Title of CR:			
Date Submitted:	35T	Change Request ID:	**CR-xxx**
Requested by:	Your Name/CR initiator	Sponsor**:**	Sponsor Name
Submitted by:	person writing this request	Assigned Owner**:**	Owner identified by PM
Priority:			

B. Change Request Information

The requester provides information concerning the requested change along with any supporting documentation**.**

Proposed Change Description:
Describe the proposed change - a summary version of this is entered into the Change Control Log in "Summary Description." The requester provides the information in this section concerning the requested change along with any supportive documentation.
Proposed Change Justification & Impact of Not Implementing Proposed Change:
Provide a justification for the proposed change and explain the impact of not implementing the proposed change - a summary version of this is entered into the Change Control Log in "Summary Impact if not implemented."
Alternatives:
Identify other actions that may be taken as an alternative to making the proposed change.

C. Change Request Analysis

The change requester or designated owner provides an explanation of the impact that this change will have on the project.

Impact on Budget (Implementation Estimate in Dollars):
Detail the impact of implementing the change to the Project Budget.
Impact on Schedule (Implementation Estimate in Days):
Detail the impact of implementing the change to the Project Schedule.
Describe Impact on other Project Resources:
Detail the impact of implementing the change to other project resources; include other interdependencies within the project or program and additional risks that may result because of the change.

D. Change Request Review

The Project Manager, Program Manager, or other designated Manager acting as the Project Manager conducts an initial review with the project team and subject matter experts and makes a recommendation(s) regarding the implementation of the request before it is proposed to the established Change or Configuration Management Review Body. Results and recommendations based on the review are provided in this section.

Review Date:	35T
Project Manager:	name
Review Team Members:	name

Review Recommendation:			
☐ **APPROVE**	☐ **DEFER**	☐ **CANCEL**	☐ **REJECT**

Rational for Recommendation:

E. Change or Configuration Management Review Body Decision

The Change or Configuration Management Review Body conducts a final review with the Project Manager and decides to approve or disapprove the request. In the blocks below record and authenticate the decision.

Approval or Disapproval and Special Instructions:			
Final Decision:			
☐ **APPROVE**	☐ **DEFER**	☐ **CANCEL**	☐ **REJECT**

Change or Configuration Management Reviewing Body Attendees:

Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	
Name:		Position:		Signature/Date:	

Project Management Document Updates:
Identify the project management documentation that will be updated to incorporate the change, exclude the Change Log as this shoudl always be updated.

Hawaiian Electric Company
Maui Electric Company
Hawaii Electric Light Company

Change Control Log

Project Name

Change Request Status Summary					Change Request Information						Requester			
Change ID	Title	Owner	Update & Comments	Status	WBS #	Summary Description	Summary Impact if not Implemented	Implementation Estimate (Dollars)	Implementation Estimate (Days)	Priority	Requester	Date Submitted	Analysis Complete Date	Review Date
			mm/dd/yy [Initials] – action/update											

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Project Status Report

The following template is the current HECO Project Status Report (PSR) template version to be used for the execution of the overall project status reporting; which includes Earned Value Management (EVM) reporting.

PRC Dashboard Project Status Sheet

Project title

Hawaiian Electric Company (HECO)

as of 1/27/2012

Program Sponsor:	N/A	***Program Manager:***	N/A
Program Name (if Applicable):	N/A	***Grandparent Proj No.:***	
Program Description:	N/A		

Project Sponsor:	N/A	Project Sponsor Rep:	N/A	Project Manager:	
				Project No.:	

Overall

Enter comment on overall performance.

Strategic Goal	O1 - Renewables
Initiative	
Responsible Area	Energy Delivery
Project Funding	Capital Project/Program
Authorization	Implementation/Construction
PUC Status	Application Discovery / IR
Project Phase	Executing
Project Activity	Active

Time

Enter comment on Time performance.

% Complete		***Project Milestones***	
Sched. Perf. Index (SPI)		*Enter Milestone Info here*	*Target Date*
PUC Approval Date	*xx/xx/xxxx*	*Milestone 1*	*xx/xx/xxxx*
PRC Authorized Date	*xx/xx/xxxx*	*Milestone 2*	*xx/xx/xxxx*
PUC Plan In-Service	*xx/xx/xxxx*	*Milestone 3*	*xx/xx/xxxx*
Actual Construct. Start	*xx/xx/xxxx*	*Milestone 4*	*xx/xx/xxxx*
Forecasted In-Service	*xx/xx/xxxx*	*Milestone 5*	*xx/xx/xxxx*
Actual In-Service	*xx/xx/xxxx*	*Milestone 6*	*xx/xx/xxxx*

Cost ($M)

Enter comment on Cost performance.

Acutal cost as of	*xx/xx/xxxx*	*Actual Cost (AC)*	
PUC Amount		*Earned Value (EV)*	
Additional		*Planned Value (PV)*	
Total Budget		***Cost Perf. Index (CPI)***	
Est. at Compl. (EAC)		*Var. at Compl (VAC)*	
EAC Formula			
Comments on Cost			

Project Description	***Schedule Variance / Time & Dependency Comments***	***Budget Variance / Cost Comments***

Quality

Enter comment on Quality management.

Risk

Enter comment on Risk management status.

Misc.

Enter comment on Misc. issues.

New News This Month	

EXHIBIT E
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Project Earned Value Management (EVM)

HECO EPMO requires that all projects are evaluated based on a quantitative industry standard project performance measure. EVM provides a quantitative basis for estimating actual completion time and actual cost at completion. Definitions provided below. It is expected that EVM be used in this project to show project progress.

Metric	Abbrev.	Interpretation	Description	Formula/Value
Budget at Completion	**BAC**	How much did you BUDGET for the TOTAL JOB?	Baseline cost for 100% of project.	N/A
Actual Cost of Work Performed or Actual Costs	**ACWP or AC**	What is the actual cost incurred?	Total costs actually incurred so far.	N/A
Budgeted Cost of Work Performed or Earned Value	**BCWP or EV**	What is the estimated value of the work actually accomplished?	Amount of budget earned so far based on physical work accomplished, without reference to actual costs.	N/A
Budgeted Cost of Work Scheduled or Planned Value	**BCWS or PV**	What is the estimated value of the work planned to be done?	The budget for the physical work scheduled to be completed by the end of the time period.	N/A
Cost Variance	**CV**	What is the dollar amount variance?	Measure of cost overrun. The difference between the budget for the work actually done so far and the actual costs so far.	Budgeted Cost of Work Performed–Actual Cost of Work Performed BCWP-ACWP
Cost Performance Index	**CPI**	What percent of cost is the project performing at?	Cost efficiency ratio. A CPI of 1.00 means that the costs so far are exactly the same as the budget for work actually done so far.	Budgeted Cost of Work Performed/ Actual Cost of Work Performed BCWP/ACWP
Schedule Variance	**SV**	What is the measure of time variance?	Measure of schedule slippage. The difference between the budget for the work actually done so far and the budgeted cost of work scheduled.	Budgeted Cost of Work Performed–Budgeted Cost of Work Sceduled BCWP–BCWS
Schedule Performance Index	**SPI**	What percent of schedule is the project performing at?	The schedule efficiency ratio. An SPI of 1.0 means that the project is exactly on schedule.	BCWP/BCWS
Estimate to Completion	**ETC**	From this point on, how much MORE do we expect it to cost to finish the job?	The expected additional cost to complete.	Estimate at Completion–Actual Cost Work Performed EAC–ACWP
Estimate at Completion	**EAC**	What do we currently expect the TOTAL project to cost?	Expected total cost based on the current cost efficiency ratio.	BAC/CPI[1]
				AC + BAC - EV[2]
				AC + (BAC - EV) / CPI[3]
				AC + ETC[4]
Variance at Completion	**VAC**	How much over or under budget do we expect to be?	Estimated cost overrun at the end of project.	Budget at Completion–Estimate at Completion BAC–EAC
Status		calculation of the current status in time	Average of CPI & SPI.	(Cost Performance Index+Schedule Performance Index)/2 (CPI+SPI)/2

[1]Used if no variances from the BAC have occurred

[2]Actual to date plus remaining budget. Used when current variances are atypical.

[3]Actual to date plus remaining budget modified by performance. When current variances are typical.

[4]Actual plus a new estimate for remaining work. Used when original estimate was fundamentally flawed.

GREEN = On track	**>1.0**
YELLOW = Slightly behind schedule or budget	**>0.85**
RED = Needs immediate attention	**>0.65**
BLACK = Killed or Restore	**<0.65**

Appendix G – Technology Consulting Master Services Agreement

See electronic document called "Appendix G – Technology Consulting Master Services Agreement.docx".

FORM OF

TECHNOLOGY CONSULTING MASTER SERVICES AGREEMENT

BETWEEN

HAWAIIAN ELECTRIC COMPANY, INC.,

AND

[CONSULTANT]

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EXHIBITS TO THE TECHNOLOGY CONSULTING MASTER SERVICES AGREEMENT

No.	Exhibit Name
1.	Definitions
2.	Form of Work Authorization

THIS TECHNOLOGY CONSULTING MASTER SERVICES AGREEMENT (the "**Master Agreement**") is made on **[DATE] ("Effective Date")**, by and between **HAWAIIAN ELECTRIC COMPANY, INC., and its subsidiaries, HAWAI'I ELECTRIC LIGHT COMPANY (HAWAI'I ELECTRIC LIGHT) and MAUI ELECTRIC COMPANY, LIMITED (MAUI ELECTRIC)** (hereinafter collectively referred to as ("**The Companies**"), a Hawaii corporation, whose principal place of business and address is 900 Richards Street, Honolulu, Hawaii 96813, and whose mailing address is P.O. Box 2750, Honolulu, Hawaii 96840-0001 and **[NAME OF CONSULTANT**] (hereinafter "**Provider**"), whose principal place of business is [**ADDRESS**], and whose mailing address is **[ADDRESS].**

W I T N E S S E T H:

WHEREAS, Company is in the business of generation, transmission, and distribution of electrical power in the State of Hawaii; and

WHEREAS, Company requires certain technology consulting services to be accomplished from time to time for its business operations; and

WHEREAS, Provider is in the business of performing technology consulting services as needed by Company; and

WHEREAS, Provider represents that it is equipped and has the skills and expertise necessary to perform the particular technology consulting services required under this Master Agreement,

NOW, THEREFORE, in consideration of these premises and of the mutual promises herein contained, Company and Provider hereby agree that Provider will perform services for Company under the following terms and conditions:

1. APPLICATION OF THIS MASTER AGREEMENT

1.1. Purpose and Contract Documents

(a) Purpose - The purpose of this Master Agreement is to set forth the terms and conditions applicable to the services or work provided by Provider for Company pursuant to Work Authorizations issued hereunder.

(b) Contract Documents - The documents that shall govern the Services consist of (i) the provisions set forth in this Master Agreement; (ii) the applicable Work Authorization; (iii) the Statement(s) of Work ("**SOW(s)**") describing specific Services to be provided to Company incorporated into the applicable Work Authorization; and (iv) all Exhibits attached to or incorporated in the foregoing (collectively, the "**Contract Documents**").

(c) Conflicts and Order of Precedence - In the event of a conflict between the Contract Documents, precedence shall be in the following order, unless otherwise agreed upon in writing by both parties in a specific Contract Document: Master Agreement, Work Authorization, SOW and then Change Order.

(d) Change Orders – If changes to any Work Authorization entered into hereunder and/or to the SOW or any Exhibits thereto are desired, it is understood that any such changes shall be evidenced by a Change Order, which shall not be valid until signed by authorized representatives of both parties. Any Change Order that will result in a Price increase or any other material modification of the Contract Documents must comply with the Authority to Issue levels set forth in Section 1.2(f) (Authority to Issue) below.

1.2. Specific Contracts; Work Authorization Process

(a) Request for Quote - During the term of this Master Agreement, the Company may from time to time issue a Request for Quote in the form of Exhibit 2 (Form of Work Authorization), Section I (Request for Quote) for certain specific Services to be performed by Provider under the terms and conditions contained in the Master Agreement, the Work Authorization(s), SOW(s) and/or any Exhibits thereto.

(b) Provider's Proposal - If Provider desires to do the requested Services, it will fill out Section II (Provider's Proposal) of Exhibit 2 (Form of Work Authorization). Such a response shall constitute an affirmative representation by Provider that it is equipped and has the expertise necessary to perform the specific Services requested in the Request for Quote.

(c) Work Authorization - If Company desires to have the Services performed by Provider, it will issue a Work Authorization by executing Section III (Work Authorization) of Exhibit 2 (Form of Work Authorization) and delivering it to Provider for countersignature. Once executed by both parties, such document shall be referred to as a "**Work Authorization**."

(d) Specific Contract - Each executed Work Authorization shall constitute a specific contract, which shall be governed by the SOW attached to such Work Authorization and the terms and conditions of this Master Agreement.

(e) Description of Services - The Services will be specifically described in the SOW(s) incorporated into the Work Authorization(s) executed by the Parties hereunder during the Term.

(f) Authority to Issue - The following are the only Company individuals authorized to sign Section III (Work Authorization) of Exhibit 2 (Form of Work Authorization) and thereby issue Work Authorizations hereunder and may do so only up to the stated limits for each Work Authorization:

Manager - Up to $100,000

Officer - Up to $250,000

Two Officers - Greater than $250,000

1.3. Definitions

In the Master Agreement (including the Work Authorization(s), each SOW and the Exhibits hereto), all capitalized terms shall have the meanings set forth in the "Definitions" Exhibit. Other capitalized terms defined elsewhere in the Contract Documents shall have the meaning ascribed to such terms when capitalized throughout the Contract Documents.

2. TERM OF MASTER AGREEMENT

2.1. Term of Master Agreement

The Term of this Master Agreement will begin as of the Effective Date and will expire on **[DATE]**; provided, however, that said Master Agreement shall continue to be effective as to any outstanding Services under a Work Authorization issued prior to that expiration date.

3. THE SERVICES

3.1. Obligation to Provide Services

(a) Obligation to Provide Services - Starting on the applicable Commencement Date(s) and continuing during the Term, Provider shall provide the Services to, and perform the Services for, Company in accordance with the Contract Documents.

(b) Responsibilities - Provider and Company will perform their respective duties, obligations and responsibilities ("**Responsibilities**") set forth in the Contract Documents. Company's failure to perform a Responsibility will excuse Provider's obligation to perform its corresponding obligations under this Master Agreement only if Provider provides notice to Company, in writing, of such failure within twenty four (24) hours of its occurrence and demonstrates that: (i) Company's failure was the direct cause of Provider's inability to perform; and (ii) Provider could not have continued performance by using commercially reasonable methods, activities and procedures. In the event that Provider satisfies the conditions described in the immediately preceding sentence, Provider will be excused from the performance of those Services impacted by Company's failure to perform only to the extent that, and for so long as, Company's failure to perform its Responsibilities prevents Provider's performance, and provided that Provider takes reasonable steps to mitigate the effects of Company's failure to perform. Company shall not be liable to Provider for any such failure by Company to perform a Responsibility and Provider's sole remedy shall be the excuse provided for in this paragraph.

3.2. Compliance

(a) Laws - Provider shall comply with applicable Laws governing the Services.

(b) Security and Company Rules - When on Company premises or carrying out Provider's duties for Company, Provider personnel shall comply with all applicable provisions of Company's Corporate Code of Conduct, Company's security regulations, information resource policies, Company's Cyber Security Procurement Requirements for Business Systems, Company's Health and Safety Manual, and all other applicable Company policies and practices that Company personnel and consultants are now or during the Services are asked to follow ("**Company Rules**"). Such Company Rules will be provided to Provider before commencement of Services or shall be provided to Provider at any time upon Provider's request. Provider shall advise its employees and contractors of these Company Rules and secure their consent to abide by the Company Rules. Unless otherwise agreed to by the Parties, Provider's personnel shall observe the working hours of Company while working on Company's premises. Provider agrees to cooperate fully and to provide any assistance necessary to Company in investigation of any security breaches which may involve Provider, its Affiliates, subcontractors or their employees or contractors.

3.3. Development and Maintenance of Documentation

In conjunction with the provision of the Services and delivery of any Work Product, Provider will be responsible for the accurate and proper preparation of, to the extent such materials have not been previously delivered to Company, any other software and materials (in both print and electronic formats), including without limitation, flow charts, schematics, user guides, and technical specifications but excluding commercially available compiler programs and utilities, necessary to allow Company, when employing reasonably skilled people, to use the Services and the Work Product. Provider will perform its obligations under this section at no additional cost to Company.

3.4. Performance and Service Levels

Provider agrees that the performance of the Services will meet or exceed each of the applicable Service Levels set forth in the "Service Level Agreement" attached to the Work Authorization and/or SOW, subject to the limitations and in accordance with the provisions set forth in the Contract Documents.

3.5. Provider to Provide and Manage Necessary Resources

Except as otherwise expressly provided in the Price set forth in the Work Authorization and/or SOW, Provider will have the responsibility and obligation to provide and administer, manage, support, maintain and pay for all resources (including personnel, hardware, software, facilities, services and other items, however described) necessary or appropriate for Provider to provide, perform and deliver the Services as required by the Contract Documents.

3.6. Coordination and Cooperation

The Services will be performed in conjunction with other operations at Company's premises. Provider shall cooperate with Company and its other contractors to the extent reasonably possible to avoid delays or hindrances of the Services as well as other operations, construction or work at the Project Site. In case of disagreement or disputes regarding the scheduling of the Services by Provider's subcontractors, if any, or between two contractors or two subcontractors at the Project Site, the Company's Project Manager shall be consulted and his or her decisions as to the proper methods for coordinating the Services shall be final.

3.7. Reports

Provider will provide those reports identified in the SOW(s) and other Contract Documents, and such additional reports as agreed by the Parties, or as reasonably requested by Company, from time to time during the Term ("**Reports**"), in accordance with the requirements (including any timing requirements) set forth therein.

4. PRICE; INVOICES; AND PAYMENTS

4.1. Price

Company agrees to pay to Provider the Price as specified in the "Price" Exhibit attached to the Work Authorization(s) and/or SOW, together with the other amounts as described in this Article 4 (Price; Invoices; and Payments).

4.2. Taxes

(a) Responsibility - Each Party will be responsible for its own income taxes, employment taxes and property taxes. Provider assumes exclusive liability for all contributions, taxes or payments required to be made because of persons hired, employed or paid by Provider by the federal and state Unemployment Compensation Act, Social Security Acts and all amendments, and by all other current or future acts, federal or state, requiring payment by the Provider on account of the person hired, employed, or paid by Provider for Services performed under the Contract Documents. Sales, use and excise taxes applicable to the value or use of any property incorporated, furnished, or otherwise supplied by Provider shall be stated separately from the Price or rates specified under Section 4.4(a)(Price), and shall not be included in any computation of profit allowed by the Contract Documents. Provider assumes exclusive liability for all such taxes charged or chargeable upon any such goods or materials supplied by Provider pursuant to each specific Work Authorization.

(b) Cooperation - The Parties agree to reasonably cooperate with each other to enable each to more accurately determine its own Tax liabilities and to minimize such Taxes incurred in connection with this Master Agreement to the extent legally possible. Provider's invoices shall separately state the amount of any Taxes Provider is collecting from Company in accordance with the terms of the "Price" Exhibit attached to the Work Authorization(s) and/or the SOW.

4.3. Tariffs, Duties and Import/Export Compliance and Fees

Provider shall be responsible for all tariffs, duties and import/export compliance and fees with respect to the Services, including timely and properly making all filings and applications, obtaining all licenses and paying all fees and charges.

4.4. Work Authorization Price, Invoices and Invoice Payment

(a) Price - Compensation for Services performed and expenses incurred shall be as set forth in each respective Work Authorization and the SOW, as applicable.

(b) Invoicing - For each Work Authorization, Provider will submit its invoice for all Services rendered pursuant to the payment schedule set forth in the Work Authorization or SOW, or if no payment schedule is specified, on a **[monthly]** basis (the "**Billing Period**"). Failure to submit invoices within ninety (90) days after the invoiced services were provided or expenses incurred shall be grounds to deny payment of such invoices. Such invoice shall be in a form approved by Company and shall at a minimum show (i) the total hours of Services performed for the applicable Billing Period by each Provider employee; (ii) the hourly rate for each Provider employee; (iii) a description of the Services performed; and (d) an itemized list of all allowable expenditures made during the Billing Period. Upon request by Company, Provider shall provide supporting documentation, including but not limited to invoices and receipts, as evidence of such expenditures. The invoice shall reference the applicable Company's Designated Representative, Company's purchase order number or Service Contract number, if any, Contract Number, Work Authorization Number and any additional information required as part of the Services hereunder. All invoices should be addressed:

Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, Hawaii 96840-0001

Attention: Accounts Payable
Service Order No. _____
Service Contract No. _____

NOTE: Do not include the name of the Company's Designated Representative in the address.

The ORIGINAL invoice, without attachments, must be sent directly to the Accounts Payable address listed above. ALL REQUIRED SUPPORTING DOCUMENTATION must be sent SEPARATELY to the Company's Designated Representative. Failure to follow this procedure may cause a delay in payment.

(c) Payments - Payment to Provider shall be made as follows:

(i) Electronic Payments - For Providers participating in Company's electronic payment program, Company will pay properly submitted invoices within fifteen (15) days after the invoice date; provided the invoice complies with Section 4.4(b)**(Invoicing).**

(ii) Manual Payments - For Providers not participating in Company's electronic payment program, Company will pay properly submitted invoices within thirty (30) days after the invoice date; provided the invoice complies with Section 4.4(b) (Invoicing).

The Company may require that Provider submit evidence reasonably satisfactory to the Company that all claims of all persons, firms or corporations that have provided Services included in any invoice have been paid or satisfactorily secured prior to making any partial payment.

(d) Withholding of Payments; Set-off - All payments, including the final payment, are subject to adjustment during or after termination of the Services on the basis of any final accounting which may be made by Company. Company may withhold from any payment, including the final payment: (i) any amount incorrectly invoiced; (ii) any amount in dispute either because Company has found the invoice excessive, or the Services performed unacceptable; or (iii) an amount sufficient to completely protect Company from any loss, damage or expense arising out of assertions by other parties of any claim or lien against Company because of Provider's performance of Services under a Work Authorization. Company further reserves the right to set-off any amounts due from Provider to Company against any amounts payable at any time by Company in connection with the Contract Documents.

(e) Payment Security – If required by Company, Provider shall post payment security as specified in the applicable Work Authorization or SOW. If the Company requires payment security (for example, via performance bond, parent guarantee or letter of credit, etc.), Provider shall submit such payment security to Company no later than seven (7) days after execution of the applicable Work Authorization or SOW.

4.5. Service Levels and Service Level Credits

(a) Service Levels. Provider shall perform the Services in accordance with the Service Level Agreement set forth in the applicable SOW or Work Authorization.

(b) Service Level Reporting. Provider shall measure and report its performance against the Service Levels set forth in the Service Level Agreement and meet with Company at least once every quarter during the Term, or more frequently if requested by Company, to review Provider's actual performance against the Service Levels and to discuss any remedial action necessary or appropriate to correct any deficiencies.

(c) Service Level Credits. If Provider fails to provide the Services in accordance with the Service Levels set forth in the Service Level Agreement included in the applicable SOW or Work Authorization, Provider shall apply the resulting Service Level Credits against the Charges owed to Provider for the month following the month in which the Service Level Credits were incurred. The precise methodology used in calculating the Service Level Credits shall be set forth in the applicable SOW or Work Authorization. The Service Level Credits represent credits for the reduced value of the Services, are not liquidated damages or penalties, shall not limit or diminish any of the remedies granted to Company hereunder, including the termination rights granted to Company in the Contract Documents, and Company shall be entitled to pursue all remedies that it may have against the Provider for the event or events giving rise to such Service Level Credits.

4.6. Acceptance

All Services and deliverables are subject to Company's acceptance. Such acceptance will occur when the applicable Services or deliverables meet the agreed upon tests or acceptance criteria specified in the applicable SOW. Acceptance procedures shall be set forth in the applicable SOW. If no requirements or acceptance criteria are set forth with respect to a particular deliverable or Services component, the acceptance criteria therefore shall be based on the Company's reasonable satisfaction therewith consistent with Provider's obligations under the Contract Documents.

4.7. Disputed Charges/Credits

In the event that Company disputes the accuracy or applicability of a Charge or credit or other financial arrangement described in the Contract Documents, Company shall notify Provider of such Dispute. The Parties will investigate and resolve the Dispute using the Dispute Resolution Procedures set forth in Article 15 (Dispute Resolution) hereof. Unpaid and uncredited monies that are the subject of a good faith Dispute may be withheld and will not be considered a basis for monetary default under, or a breach of, the Contract Documents.

5. COVENANTS

5.1. Covenant of Cooperation and Good Faith

The Parties covenant to timely and diligently cooperate in good faith to effect the purposes and objectives of this Master Agreement. Except as otherwise provided herein, neither Party shall unreasonably withhold or delay any consent, approval or request by the other Party required under the Contract Documents.

5.2. Services

Provider shall render Services using personnel that have the necessary knowledge, training, skills, experience, qualifications and resources to provide and perform the Services in accordance with the Contract Documents, and shall render Services in a prompt, professional, diligent, workmanlike manner consistent with industry standards applicable to the performance of such Services.

5.3. Timeliness of Performance

Provider acknowledges that prompt performance of all Services hereunder is a material obligation and is required by Company in order to meet its scheduled commitments. In the event that any anticipated or actual delays in meeting scheduled completion dates are caused by the unacceptable performance of Provider, Provider shall take the necessary steps, including the provision of additional personnel (if necessary), as reasonably requested by Company and at no additional charge to Company, in order to complete the assignment involved in a timely manner.

5.4. Export; Regulatory Approvals

With respect to any information disclosed pursuant to the Contract Documents:

(a) Each Party agrees to comply with all applicable U.S. export control and sanctions laws and regulations, including, but not limited to, the Arms Export Control Act, 22 U.S.C. 2751-2794, the International Traffic in Arms Regulations (ITAR), 22 C. F. R. 120 et seq.; the International Emergency Economic Powers Act (IEEPA), 50 U.S.C. 1701 et seq.; and the Export Administration Regulations, 15 C.F.R. 730-774, including the requirement for obtaining any export license or agreement, if applicable.

(b) When a Party discloses information that is controlled for export by U.S. law to the other Party, the disclosing Party will immediately notify the receiving Party and provide the applicable export control classification for the information.

(c) Each Party agrees that it will not export, re-export, or transfer (to include transfer to foreign persons employed by or associated with, or under contract to, that Party or the Party's suppliers) any information that it receives from the other Party, in whatever format, that is controlled for export without first obtaining the necessary U.S. Government authorization or relying on an applicable exception. This Section applies to the export, re-export, or transfer of information to foreign persons, wherever located.

(d) Each Party shall immediately notify the other Party if it is, or becomes, listed on any U.S. export control or sanctions list, (including, but not limited to the Denied Persons List, the Unverified List, the Entity List, the Specially Designated Nationals List, and the Debarred List), or if the Party's export privileges are otherwise denied, suspended or revoked in whole or in part by any U.S. Government entity or agency.

(e) Each U.S. Party that is engaged in the business of either exporting or manufacturing (whether exporting or not) Defense Articles or furnishing Defense Services, as those terms are defined in 22 C.F.R. 120.6 and 120.9, represents that it is registered with the Directorate of Defense Trade Controls at the Department of State as required by the ITAR.

(f) Each Party shall be responsible for its own losses, costs, claims, causes of action, damages, liabilities, and expenses including attorneys' fees, all expenses of litigation and/or settlement, arising from any action or admission of that Party, its suppliers or subcontractors in the performance of any of its obligations under this Section.

(g) Notwithstanding anything herein to the contrary, the obligations of each Party under this Master Agreement are contingent on the Party's obtaining the export authorizations required to fulfill its obligations

(h) Provider will timely obtain and maintain all necessary approvals, licenses and permits (required by law or otherwise) applicable to its business and the provision of the Services.

5.5. Malware

Provider will (consistent with the following sentence) ensure that no Malware or similar items are coded or introduced into the Services, the Company Systems interfacing with the Services, the Company Software, the Provider Information Systems and operating environments and processes used by Provider to provide the Services, including the information, data and other materials delivered by or on behalf of Provider to the Company, the customers of the Company and/or the Third Party Providers (collectively, the "**Environment**"). Provider will continue to review, analyze and implement improvements to and upgrades of its Malware prevention and correction programs and processes that are commercially reasonable and consistent with the then current technology industry's standards and, in any case, not less robust than the programs and processes implemented by Provider with respect to its own information systems. If Malware is found to have been introduced into the Environment, Provider will promptly notify Company and Provider shall eliminate the effects of the Malware at Provider's expense. Provider shall not modify or otherwise take corrective action with respect to the Company Systems except at Company's request. In all cases, Provider shall take immediate action to eliminate and remediate the Malware's proliferation and its effects on the Environment. Provider will promptly report to Company the nature and status of all Malware elimination and remediation efforts.

5.6. Disabling Code

If the Services include the development of software code, Provider covenants that Provider will ensure that there is no Disabling Code in any Provider Software. Provider further covenants that with respect to any Disabling Code that may be part of the Provider Software or Company Software, Provider will not invoke Disabling Code at any time, including upon expiration or termination of the Master Agreement and/or any Work Authorization, or any SOW for any reason.

5.7. Services Not to be Withheld

Provider will not willfully refuse to provide all or any portion of the Services set forth in the Master Agreement or any SOW. Provider acknowledges that its refusal to provide all or any of the Services or its abandonment of this Master Agreement and/or any Work Authorization(s) or any SOW in violation of the immediately preceding sentence would cause irreparable harm, the amount of which would be impossible to estimate, thus making any remedy at law or in damages inadequate. Provider therefore agrees that Company shall have the right to apply to any court of competent jurisdiction for and be granted an injunction

compelling specific performance by Provider of its obligations under the Master Agreement and/or any Work Authorization(s), and/or the applicable SOW without the necessity of notice, posting any bond or other security and Provider shall not request the posting of any such bond or other security. This right shall be in addition to any other remedy available under the Contract Documents, at law or in equity (including the right to recover damages).

5.8 Compliance with Law.

Provider shall comply with all Laws applicable to Provider and shall obtain all applicable permits and licenses required of Provider in connection with its obligations under this Master Agreement.

5.9 No Infringement.

Provider shall ensure that none of the Services, Provider Information System, Work Product or any enhancements or modifications to the Company Software performed by Provider or its subcontractors or any other resource or item provided by Provider to Company shall infringe upon the proprietary rights of any third party.

6. REPRESENTATIONS AND WARRANTIES

6.1. Representations and Warranties of Provider

Provider hereby makes the following representations and warranties to Company as of the Effective Date of this Master Agreement and as of the Execution Date of each Work Authorization:

(a) Good Standing. Provider is a **[_____]** validly existing and in good standing under the Laws of **[_____]**.

(b) Authority. Provider has all requisite power and authority to execute, deliver and perform its obligations under this Master Agreement.

(c) No Conflicts. the execution, delivery and performance of this Master Agreement by Provider (i) has been duly authorized by Provider and (ii) will not conflict with, result in a breach of, or constitute a default under, any other agreement to which Provider is a party or by which Provider is bound.

(d) Qualified to Do Business. Provider is duly licensed, authorized or qualified to do business and is in good standing in every jurisdiction in which a license, authorization or qualification is required for the ownership or leasing of its assets or the transaction of business of the character transacted by it, except where the failure to be so licensed, authorized or qualified would not have a material adverse effect on Provider's ability to fulfill its obligations under this Master Agreement.

(e) Compliance with Law. Provider is in compliance with all Laws applicable to Provider and has obtained all applicable permits and licenses required of Provider in connection with its obligations under this Master Agreement.

(f) Consents - Except as otherwise provided in this Master Agreement, no authorizations or other consents, approvals or notices of or to any Person are required in

connection with (i) the execution, delivery and performance by Provider of this Master Agreement, (ii) the development, implementation or operation of the Software and systems necessary for Provider to perform the Services in accordance with the applicable provisions of the Contract Documents and in compliance with all applicable Laws and Provider regulatory requirements, or (iii) the validity and enforceability of the Contract Documents.

(g) No Infringement - The Provider Information System and any Work Product, and Company's use thereof, and the Services, and Company's receipt thereof, shall not infringe any U.S. patent or copyright, misappropriate any Trade Secret or other proprietary right of any Third Party, or otherwise conflict with the rights of any Third Party.

(h) Performance Warranty - The Services will conform to the description of the Services set forth in the Contract Documents and to general industry standards for the Services and products offered by Provider pursuant to the Contract Documents. Provider further acknowledges that review and approval by Company of any deliverables or Work Product prepared by Provider in the performance of the Services shall not relieve Provider or any of its subcontractors or vendors of its professional responsibility for the Services.

(i) Data Processing and Transfers - With respect to each transfer of Personally Identifiable Information, Provider (i) has full legal authority in each jurisdiction where Personally Identifiable Information will be Processed to Process such Personally Identifiable Information; (ii) will Process such Personally Identifiable Information only on behalf of the Company and only as necessary to perform the Services; (iii) will use such Personally Identifiable Information for purposes not incompatible with those for which it was collected or subsequently authorized by the data subject; and (iv) has complied, and will comply, with all applicable Laws with respect to the transfer, Processing and any subsequent transfer of Personally Identifiable Information to a Third Party.

(j) Open Source - Provider has not and will not incorporate any Open Source Software (whether in source code or object code format) into the Work Product or Company Software used in connection with providing the Services (collectively, "**Affected Products**"), and none of the Affected Products or any portion thereof is or will be subject to or distributed under any license, other agreement or understanding, that (i) would require the distribution of source code with the Affected Products or require source code to be made available when such is distributed to any Third Party; (ii) would impact, restrict or impair in any way Company's ability to license the Affected Products (to the extent owned or licensable by Company) pursuant to terms of Company's choosing; or (iii) would impact or limit Company's ability to enforce Company's patent or other Intellectual Property Rights against any Third Party in any manner.

(k) Documentation Deliverables - Any deliverable consisting of documentation of any software or hardware deliverable will accurately reflect the operation of said software or hardware deliverable.

(l) No Litigation - There is no action, suit, proceeding or investigation pending or, to Provider's knowledge, threatened, that questions the validity of the Contract Documents or Provider's right to enter into this Master Agreement, the Work Authorization(s) and any SOW or to consummate any of the transactions contemplated by them.

(m) Materials - Provider warrants that, for Materials obtained by Provider for Company, such Materials shall be new and unused, and Company shall acquire good and clear title thereto, free and clear of all liens and encumbrances.

6.2 Remedial Measures - In the event of a breach of Section 6.1(h) (Performance Warranty), Provider shall (i) bring the affected Service and/or deliverables into material compliance with the specifications therefore set forth in the Work Authorization or SOW, as applicable, within a commercially reasonable period of time (which in no event shall exceed fifteen (15) days after notice of defect, unless otherwise agreed to by the Parties in writing); (ii) re-perform the Services within a commercially reasonable period of time (which in no event shall exceed fifteen (15) days after notice of defect, unless otherwise agreed to by the Parties in writing); or if (i) or (ii) cannot be accomplished (iii) return an appropriate portion of the fees paid by the Company with respect to the applicable portion of the Services or deliverables and of any applicable functionally related portion of the deliverables.

7. GOVERNANCE

Provider's personnel are expected to perform their work in a manner consistent with the degree of care and skill ordinarily exercised under similar circumstances of the same profession and to comply with Company's written technical standards and procedures, where agreed and incorporated into a SOW(s), and with the Company Rules. Provider will be required to provide all infrastructure and administrative support for its personnel during the Term, at its own expense, including without limitation, computer hardware, software and peripherals, office supplies, administrative assistants, travel planners, and the like.

8. RELATIONSHIP PROTOCOLS

8.1. Non-Exclusive; Alternate Providers

Unless otherwise expressly provided in any SOW, the relationship between the Parties is non-exclusive. During the Term, Company shall have the right to retain Third Party vendors to perform any service, function, responsibility, activity or task whether or not it is within the scope of the Services, or to perform any such services, functions, responsibilities or tasks (whether all or a part of the Services) internally. Provider shall cooperate with any such Third Party vendors and Company as requested from time to time.

8.2. Provider Personnel

(a) Company Requested Replacement of Provider Personnel - If Company determines in its discretion and for reasons that are not unlawful, that the continued assignment to the Company account of any Provider personnel is not in the best interests of Company, then the Company's Designated Representative may request by written notice that Provider replace any such individual with another qualified individual. After receipt of such notice, Provider will promptly remove such individual from the Company account and replace such individual with Provider personnel possessing qualifications and skills appropriate to the position. The Company shall have the right to approve all such replacement personnel and such approval shall not be unreasonably withheld.

(b) Background Investigations - To the extent not prohibited by applicable Law and in accordance with Company's policies, Provider will perform or arrange for a background investigation of all of Provider's personnel who will perform any of the Services, or any part thereof or related thereto, or will have access to any Company Confidential Information. In addition, Provider will ensure that all Provider subcontractors perform or arrange for a

background investigation, in the same manner, of all Provider subcontractors' personnel who will perform any of the Services, or any part thereof or related thereto, or who will have access to any of Company Confidential Information. Provider shall not assign any personnel to Company's account or otherwise permit any of its personnel to have access to Company Confidential Information who have been found to have engaged in certain criminal acts or tested positive for certain drugs specified by Company. Notwithstanding the foregoing, Company shall have the right independently to conduct background criminal conviction and security clearance checks on all Provider's personnel and contractors who will perform Services on Company premises, and Provider shall cooperate with Company's right to do the same (for example, by requiring Provider's, its Affiliates' and its subcontractors' personnel and contractors to sign consents for Company to perform such security clearance checks).

(c) Offshoring of Assignments - Unless otherwise agreed by Company, all personnel performing work in connection with the Services under the Contract Documents outside of the United States of America used by Provider in any Service shall be employees of Provider; and in all events, Provider shall retain the Company Confidential Information within the United States of America or another location approved and certified by the Company in writing.

(d) Independent Contractor - Provider shall be solely responsible for the payment of compensation (including provision for employment taxes, federal, state and local income taxes, workers compensation and any similar taxes) associated with the employment of Provider's employees. Neither Party shall be deemed a joint employer of the other's employees and each Party shall be responsible for any and all claims by its employees. Neither Party's employees shall be deemed "leased" employees of the other for any purpose. In connection with the Contract Documents, each Party is an independent contractor and does not have authority to bind or commit the other.

8.3. Use of Subcontractors

(a) No Subcontracting Without Consent - Provider shall not subcontract any portion of the Services without the prior written consent of Company, which may be withheld in its sole discretion, and otherwise in accordance with this section. The Parties will develop and prepare a list of approved subcontractors that the Parties agree may be engaged by Provider to perform and deliver the part or portion of the Services indicated on such list as a subcontractor to Provider, which will be set forth in the "Subcontractors" Exhibit attached to the applicable Work Authorization and/or SOW.

(b) Provider's Agreements with Subcontractors - Before any permitted subcontractor of Provider begins to perform any Service, Provider shall require each such subcontractor to agree to assign its rights in the Work Product and maintain the confidentiality of the Company Confidential Information and Provider shall submit to Company proof of such agreement upon Company's request. Provider shall also provide in its agreements with Provider subcontractors such written provisions as are sufficient to enable Provider to comply with the provisions of the Contract Documents.

(c) Responsibility of Provider - Provider shall remain primarily liable and obligated to Company for the timely and proper performance of all of its obligations hereunder, even if such obligations are delegated to a Company-approved subcontractor, and for the proper and timely performance and actions of any person or entity to which it delegates or subcontracts any such obligation.

(d) Replacement - In the event that Company determines that it is not in the best interests of Company for a subcontractor to continue performing any part or portion of the Services, Provider shall promptly remove such subcontractor from providing any Services under the Master Agreement upon request by Company.

8.4. Contract Management

(a) The "Third Party Agreements" Exhibit(s) attached to the applicable Work Authorization and/or the SOW shall set forth those Third Party Agreements that will govern Provider's use of the Company Software in connection with the provision of the Services described therein. To the extent provided to Provider, in accordance with the "Third Party Agreements" Exhibit, Provider shall comply with the terms and conditions of all such Third Party Agreements.

8.5. Inspections and Audits

(a) Provider Records - Provider shall maintain, at all times during the Term and at no additional charge to Company, complete and accurate records and supporting documentation pertaining to: (i) all Charges and financial matters under the Contract Documents; (ii) all other transactions, reports, filings, returns, analyses, Work Product, data and/or information created, generated, collected, processed or stored by Provider and/or Provider's subcontractors in the performance of the Services; and (iii) Provider's internal controls relating to the Services and relating to Company's control over the activities of Provider (collectively, "**Provider Records**"), all in a manner sufficient to permit the audits in accordance with this Section 8.5 (Inspection and Audits).

(b) Operational Audits - Provider shall provide to Company and to internal and external auditors, inspectors, regulators and other representatives that Company may designate from time to time ("**Company Auditors**") access in accordance with Section 8.5(d) (General Principles Regarding Audits) to perform operational audits and inspections of Provider, its subcontractors and their respective facilities ("**Operational Audits**"), to: (i) verify the integrity of the Company Data, (ii) examine the systems that process, store, support and transmit that data and examine the results of external Third Party data processing audits or reviews relating to Provider's operations relevant to the Services, (iii) verify whether the Services comply with the Company Rules; (iv) examine the controls (e.g., financial and accounting controls, organizational controls, input/output controls, system modification controls, processing controls, system design controls, and logical and physical access controls) and conduct walkthroughs (as defined by the Public Company Accounting Oversight Board ("**PCAOB**") and other testing and review procedures); (v) examine the security, disaster recovery and back-up practices and procedures, (vi) examine the development of Work Product; (vii) facilitate Company's compliance with Company Rules; (viii) evaluate Provider's performance and operations in light of applicable ISACA and RiskIT standards; and (ix) examine, test and assess Provider's systems, policies and procedures relating to intrusion detection and interception with respect to the Provider Information Systems used to provide the Services.

(c) Financial Audits - Provider shall provide to Company and Company Auditors access in accordance with Section 8.5(d) (General Principles Regarding Audits) to perform financial audits and inspections ("**Financial Audits**") to: (i) verify the accuracy and completeness of Provider Records, and (ii) verify the accuracy and completeness of Provider's invoices. If an audit reveals that errors have been made in connection with the Charges, then the Parties will work together to correct the error and any overpayments revealed by the audit

will be promptly paid by Provider or credited to Company. In addition, if the audit reveals any overpayment that is greater than five percent (5%) of the amount that was actually due for the period being audited, Provider shall bear the cost of the Audit, which cost shall not exceed reasonable and customary fees and in no instance shall such cost exceed $150,000.

(d) General Principles Regarding Audits.

Provider shall provide Company Auditors with reasonable access upon at least forty-eight (48) hours prior notice (unless circumstances reasonably preclude such notice) to: (i) the parts of any location at which Provider is providing the Services; (ii) Provider Information System used to provide the Services; (iii) Provider personnel providing the Services; (iv) Provider subcontractors and agents who perform any portion of the Services (including to such entity's personnel, facilities, records, systems, controls, processes and procedures); and (v) all Provider Records related to this project. Company Audits will be conducted in a manner that does not unreasonably disrupt or delay Provider's performance of services for its other customers. Company Auditors' access to the Provider Records shall include, but not be limited to, the right to inspect and photocopy same, the right to retain copies of such Provider Records outside of the locations and/or other Provider or Provider subcontractor premises, with appropriate safeguards, if such retention is deemed necessary by Company, and the right to install and operate audit software. Provider shall provide full cooperation to Company Auditors and Governmental Authorities.

(e) Copies of Audit Reports; Notice of Deficiency. Upon completion of any Operational Audit and/or Financial Audit (collectively, "**Company Audits**"), Company shall notify Provider of any deficiencies or material weaknesses found as a result of the Company Audit, and provide Provider with copies of portions of Company Audit reports reflecting or based upon information obtained from Provider.

(f) Action Plan - As part of the Services, in the event any audit reveals a deficiency or material weakness, Provider shall provide Company with a plan of action to correct the deficiency or material weakness, which plan of action shall be subject to Company's written approval and shall, at a minimum, include: (i) details of actions to be taken by Provider and/or its subcontractors to correct the deficiency or material weakness, and (ii) target dates for successful correction of the deficiency or material weakness ("**Action Plan**"). Provider shall provide the Action Plan within ten (10) Business Days of Provider's identification or Company's notice of such deficiency or material weakness. Provider shall also provide Company with notice of (A) Provider's successful completion of each action identified in the Action Plan; and (B) any delays in Provider's completion of the actions identified in the Action Plan, accompanied by an explanation of the cause of such delay.

(g) Cost of Audits - Company shall be responsible for all costs associated with Company Audits (other than Provider's reasonable cooperation and provision of access), except as provided for in Section 8.5(c) (Financial Audits).

(h) Document Retention - Provider shall retain all records, documents and data required to be maintained by it under the Contract Documents for such period as may be specified therein or as required by any Law applicable to the Company or pursuant to the document retention policies of the Company provided to Provider from time to time (but in any event, at least seven (7) years after performance of the Services). All such records, documents and data shall be maintained in such form (for example, in paper or electronic form) as may be

specified in any Contract Documents or, if not so specified, in the form in which they are generated and stored in the ordinary course, or as Company may direct.

(i) Right; Not Obligation – Company shall have the audit rights as specified in this Article 8, but it has no obligation to perform any or all of the same.

(j) Provider Compliance Manager - Provider will appoint, and maintain at all times during the Term, a liaison who will address issues arising in connection with the performance of Provider's obligations or, the exercise of Company's rights, pursuant to this Article (the "**Audit Compliance Liaison**").

9. TECHNOLOGY; INTELLECTUAL PROPERTY RIGHTS

9.1. Company Software

The initial list of Company Software that is necessary for the Provider to access and/or use to perform the Services shall be identified in a "Company Software" Exhibit attached to the applicable Work Authorization and/or the SOW. The "Company Software" Exhibit shall be updated as provided therein and shall set forth all Company Software to be accessed and/or used by Provider in support of or in connection with the Services covered by each SOW.

9.2. Provider Software

The initial list of Provider Software that is necessary for Provider to access and/or use to perform the Services shall be identified in the "Provider Software" Exhibit attached to the applicable Work Authorization and/or the SOW. Provider shall authorize access to and/or use of the Provider Software to the authorized representatives of Company Group during the Term in accordance with the provisions set forth in the "Provider Software" Exhibit.

9.3. Pre-Existing Materials

(a) Provider Pre-Existing Materials. All inventions or Materials made, developed or copyrighted by Provider (including the Provider Tools) (i) prior to the Effective Date, (ii) developed by Provider during the term of this Master Agreement that are outside the scope and any Work Authorization or SOW entered into under this Master Agreement ("**Provider Pre-existing Materials**") shall continue to be owned by Provider.

(b) Company Pre-Existing Materials. All inventions or Materials made, developed or copyrighted by Company (including the Company Tools) (i) prior to the Effective Date, (ii) developed by Company during the term of this Master Agreement that are outside the scope and any Work Authorization or SOW entered into under this Master Agreement ("**Company Pre-existing Materials**") shall continue to be owned by Company.

(c) License to Provider's Pre-Existing Materials. If the Work Product includes or requires the use of any Provider Pre-Existing Materials (excluding the Provider Tools), then Provider grants and agrees to grant to the Company (i) an unrestricted, royalty-free, perpetual license to use, display, copy, create Derivative Works of and perform the inventions, information or other aspects of the Pre-existing Materials, but only to the extent necessary to use, display, copy and create Derivative

Works of the Work Product, and (ii) the right to sublicense to Third Parties to do any of the foregoing, in all cases consistent with the rights granted under this Article 9 (Technology and Intellectual Property Rights). Notwithstanding the foregoing, the Company is not granted the right to sell such Work Product(s) to a Third Party. Notwithstanding the foregoing, with respect to any Materials that are developed solely by the Company and their respective contractors and that constitute a Derivative Work of any Pre-existing Materials developed by Provider, its Affiliates or its or their subcontractors, such Derivative Works (including all Intellectual Property Rights therein), as between Provider and the Company, shall be owned by the Company.

9.4. Provider Tools

Provider grants to Company and its Affiliates (including their respective Third Party service providers, but only to the extent such Third Party service providers are providing services for the benefit of the Company) an unrestricted, royalty-free, non-exclusive, worldwide, irrevocable, perpetual license to use and access, modify, maintain, enhance, create Derivative Works based upon (which shall be owned by Company), the Provider Tools (whether embedded or incorporated into Work Product, or to the extent existing as a standalone tool), in object and source code format, but only to the extent necessary to further develop, maintain and otherwise fully enjoy the rights granted to Company hereunder in any Work Product.

9.5. Ownership of Work Product

(a) Work Product. All results of the Services created or developed by Provider, by itself or jointly with the Company or others, including the Developed Software, Reports, deliverables, business methods or processes, programs, systems, processes, data development, modification and enhancement of systems, computer programs, operating instructions, specifications, technical information, ideas, inventions, drawings, works of authorship, designs, concepts and all other documentation, developed for the Company pursuant to a particular SOW and all such documents, data and other information of any kind, including information incorporating, based upon, or derived from the foregoing, and reports prepared by Provider or any Provider personnel (any of the foregoing whether or not completed), together with all modifications, revisions, changes, copies, translations, compilations, and Derivative Works of the foregoing (collectively, the "**Work Product**"), upon creation are, shall be and shall remain the property of Company and may not be used by Provider, its Affiliates or subcontractors or their personnel for any other purpose except for the benefit of the Company; provided, however that Work Product shall not be deemed to include Provider's Pre-existing Materials.

(b) Provider's Duty to Disclose Inventions. During the Term, Provider shall disclose promptly to Company any inventions or improvements made or conceived by Provider, its Affiliates or subcontractors or their personnel that result from work performed under the Contract Documents pursuant to the a particular SOW or any other Contract Documents or as a result of information supplied to Provider, its Affiliates or subcontractors or their personnel, directly or indirectly, by Company. Provider represents it does not have any commitments to others under which Provider is obligated to assign to such others inventions or improvements or rights therein in conflict with Provider's obligations to Company pursuant to the Contract Documents. The Contract Documents, including without limitation, and any SOW shall be construed to provide Company with the unencumbered right to own, use, modify, copy, and distribute the Work Product.

(c) Company's Ownership of Work Product. Company shall have all right, title and interest, including worldwide ownership of all Intellectual Property Rights in and to the Work Product and all copies made from it. To the extent any of the Work Product is not deemed a "work for hire" by operation of law, Provider hereby irrevocably assigns, transfers and conveys to Company, and shall cause the Provider personnel and the personnel of its Affiliates and any subcontractors to assign, transfer and convey to Company, without further consideration, all of their right, title and interest in and to such Work Product, including all Intellectual Property Rights in and to such Work Product. Provider acknowledges, and shall cause the Provider personnel and the personnel of its Affiliates and any subcontractors to acknowledge, that Company and its successors and permitted assigns shall have the right to obtain and hold in their own name any Intellectual Property Rights in and to such Work Product, unencumbered by any claim by Provider or any Provider personnel, and the personnel of its Affiliates and any subcontractors. Provider agrees to execute, and shall cause the Provider personnel and the personnel of its Affiliates and any subcontractors to execute, any documents or take any other actions as may reasonably be necessary, or as Company may reasonably request, to evidence, perfect, maintain and enforce Company's ownership of any such Work Product, whether during the Term or thereafter. The territorial extent of the rights in the Work Product assigned to Company by Provider and/or the Provider personnel under the Contract Documents shall extend to all the countries in the world. The assignment of the Intellectual Property Rights in the Work Product by Provider and/or the Provider personnel to Company shall be royalty-free, absolute, irrevocable and perpetual.

(d) Moral Rights. With respect to the "moral rights" of any author in any of the Work Product, and subject to the other provisions of this Section, Provider acknowledges that it is responsible for assuring that Company is entitled to (i) the undisturbed use of such items, and (ii) in particular and without limitation hereto, to exercise (on a co-ownership basis, as necessary) for the relevant author the right of dissemination, the right of recognition of authorship, the right to prevent distortions of the work, the right to decide whether the work should bear the author's designation, the right of access to copies of the work and the revocation rights for such items.

9.6. License to Embedded Provider Software

If Provider incorporates or embeds any Provider Software into any Company Software or Work Product ("**Embedded Provider Software**"), Provider hereby grants, and agrees to grant, to the Company (a) a worldwide, nonexclusive, royalty-free, perpetual, irrevocable license to use and create Derivative Works of such Embedded Provider Software (i) to the extent necessary to develop, maintain and otherwise fully enjoy the rights granted to Company hereunder in such Work Product for the normal business purposes of the Company and (ii) solely as used in such Work Product and not as a "stand-alone" product or separately from such Work Product in which it is embedded, and (b) the right to sublicense Third Parties to do any of the foregoing. Notwithstanding the foregoing, the Company is not granted the right to sell such Work Product(s) to a Third Party. Provider shall cause its personnel and the personnel of its Affiliates and any subcontractors (and their respective employees, agents and subcontractors), as applicable, to grant such licenses.

9.7. No Implied Licenses

(a) No Implied Licenses. Neither the Contract Documents nor any disclosure made thereunder grants any license to either Party under any Intellectual Property of the other Party, except for the licenses expressly granted under the Contract Documents.

9.8. Limitation on Grants of Rights

Any ownership or license rights herein granted to either Party in the Contract Documents may be limited by and subject to any Intellectual Property owned by, and terms and conditions of any license agreements with, applicable Third Party Providers (excluding Provider and its Affiliates and its or their permitted subcontractors); provided, however, to the extent any of the Work Product (including all Intellectual Property embodied therein) are not owned by or licensed to the Party with an obligation to grant a license or transfer ownership of such Materials to the other Party (as described in this Article 9 (Technology; Intellectual Property Rights), the Party with the obligation to grant such license or transfer such ownership shall take such action as shall be necessary or required to fulfill such obligations and promptly and timely grant such license or transfer such ownership.

9.9. Assignment

To the extent ownership of any of the Work Product (including all Intellectual Property Rights therein) is not, by operation of law, vested in the Party to which ownership has been granted (as described in this Article 9 (Technology; Intellectual Property Rights), each Party agrees to, and to cause its Affiliates to (and with respect to Provider, Provider's subcontractors to) assign and hereby assigns, without further consideration, the ownership of all right, title and interest in such Materials (including all other Intellectual Property rights embodied therein) to the other Party and shall execute such other documents, including patent assignments, and shall provide such additional information, all as may be reasonably necessary to permit the assignee Party to obtain and perfect in its own name all Intellectual Property Rights therein and thereto.

9.10. Third Party Software

(a) After the Effective Date of this Master Agreement and, with respect to any SOW incorporated into any Work Authorization entered into hereunder, the Execution Date of each SOW, Provider will not, without the prior written consent of Company, incorporate any Third Party Software into any Work Product. In the event that Provider intends to incorporate any Third Party Software into the Work Product in breach of this provision Provider will (i) obtain Company's written consent prior to incorporating such Third Party Software into any Work Product or deliverable; (ii) identify any additional costs or savings associated with incorporating such Third Party Software into the Work Product or deliverable, including any costs related to obtaining appropriate license rights to such Third Party Software; and (iii) identify any limitations on the license. In the event that Provider incorporates Third Party Software into any Work Product without obtaining Company's consent as required by this Section 9.10(a), then Provider shall obtain the right to grant to Company an irrevocable, perpetual, fully paid-up, global license to access, display, use and maintain such Third Party Software (in object and source code format) for the benefit of the Company upon any expiration or termination of the Master Agreement. In the event that Provider incorporates such Third Party Software into any Work Product without obtaining Company's consent as required by this Section 9.10(a) and Provider is unable to obtain the rights described in the immediately preceding sentence, Company may

agree to permit Provider to provide a workaround acceptable to Company (in Company's sole discretion).

(b) Provider shall, and shall cause its Affiliates and subcontractors to, comply with all license, usage and other obligations under all licenses and maintenance agreements for the Company Third Party Software, including without limitation, the obligations of nondisclosure and scope of use.

10. CONFIDENTIALITY AND DATA

10.1. Confidentiality and Non-Disclosure

(a) For the purposes of this Master Agreement, "**Confidential Information**" means all information and documentation of Company and Provider, respectively, whether disclosed to or accessed by Company or Provider in connection with this Master Agreement, including (i) with respect to Company, all Company Data, all information of Company or its customers, suppliers, contractors and other third parties doing business with Company, and all records and reports related to the Company Group, the business of the Company Group and the Services whether in existence at the Effective Date or compiled thereafter in the course of performing the Services, and (ii) any information developed by reference to or use of Company's or Provider's information. The Party disclosing such information shall be referred to in this section as the "**Disclosing Party**," and the Party receiving such information shall be referred to as the "**Receiving Party**."

(b) The Receiving Party will hold in confidence and, without the consent of the Disclosing Party, will not use, reproduce, distribute, transmit, or disclose, directly or indirectly, the Confidential Information of the Disclosing Party except as permitted herein. The Receiving Party may only disclose the Confidential Information to its officers, directors, employees, professional advisors and its Affiliates and any subcontractors with a direct need to know the information for the implementation or exercise of rights and/or performance of obligations under or arising from the Contract Documents, provided that such persons/entities are bound by written confidentiality agreements with terms and conditions that are no less restrictive than those contained in this Article 10 (Confidentiality and Data). Without limiting the foregoing, the Receiving Party agrees that it will exercise at least the same standard of care in protecting the confidentiality of the Disclosing Party's Confidential Information as it does with its own Confidential Information of a similar nature, but in any event, no less than reasonable care.

(c) Confidential Information for purposes of the Contract Documents shall not include information if and only to the extent that the Receiving Party establishes that the information: (i) is or becomes a part of the public domain through no act or omission of the Receiving Party; (ii) was in the Receiving Party's lawful possession prior to the disclosure and had not been obtained by the Receiving Party either directly or indirectly from the Disclosing Party; (iii) is lawfully disclosed to the Receiving Party by a third party without restriction on disclosure; or (iv) is independently developed by or for it without the use of the other Party's Confidential Information. Confidential Information may also be disclosed by the Receiving Party pursuant to a requirement of a governmental agency, regulatory body or by operation of law, provided that the Receiving Party shall disclose only that part of the Confidential Information that it is required to disclose and shall notify the Disclosing Party prior to such disclosure in a timely fashion in order to permit the Disclosing Party to lawfully attempt to prevent or restrict such disclosure should it so elect, and shall take all other reasonable and lawful measures to

ensure the continued confidential treatment of the same by the party to which the Confidential Information is disclosed.

(d) Any provision herein to the contrary notwithstanding, Company may disclose Confidential Information, as necessary and appropriate, to the State of Hawaii Public Utilities Commission ("**Commission**") and/or State of Hawaii Consumer Advocate ("**CA**") (including their respective staffs) provided that such disclosure is made under a protective order entered in the docket or proceeding with respect to which the disclosure will be made or any general protective order entered by the Commission.

10.2. Ownership of Company Confidential Information

(a) Ownership of Confidential Information. All Provider Confidential Information is, or will be, and shall remain the property of Provider. All Company Confidential Information is, or will be, and shall remain the property of Company. Without Company's approval (in its sole discretion), the Company Confidential Information shall not (i) be used by Provider or Provider subcontractors other than in connection with providing the Services, (ii) be disclosed, sold, assigned, leased or otherwise provided to third parties by Provider or Provider subcontractors or (iii) be commercially exploited by or on behalf of Provider or Provider subcontractors. Provider hereby irrevocably assigns, transfers and conveys, and shall cause Provider subcontractors to assign, transfer and convey, to Company without further consideration all of its and their right, title and interest in and to the Company Confidential Information. Upon request by Company, Provider shall execute and deliver, and shall cause Provider subcontractors to execute and deliver, any financing statements or other documents that may be necessary or desirable under any Law to preserve, or enable Company to enforce, its rights.

(b) Return of Company Confidential Information. Upon request by Company at any time and from time to time and without regard to the default status of the Parties under the Contract Documents, Provider and/or its subcontractors shall promptly deliver to Company the Company Confidential Information (including without limitation all Company Data) in its possession in such format as may be reasonably requested by Company and in such hard copy as exists on the date of the request by Company. Provider shall also erase or destroy all or any part of Company Confidential Information in Provider's possession, in each case, to the extent requested by Company.

10.3. Loss of or Unauthorized Access to Company Confidential Information; Intrusions

(a) Safeguards - In addition to any other requirements in the Contract Documents, Provider shall establish an information security program with respect to Company Confidential Information, including Personally Identifiable Information, which: (i) ensures the security and confidentiality of such Company Confidential Information, including Personally Identifiable Information; (ii) protects against any anticipated threats or hazards to the security or integrity of such Company Confidential Information, including Personally Identifiable Information, and (iii) protects against any unauthorized use of or access to such Company Confidential, including Personally Identifiable Information. Provider shall also establish and maintain network and internet security procedures, protocols, security gateways and firewalls with respect to such Company Confidential Information, including Personally Identifiable Information. All of the

foregoing shall be consistent with the Company Rules and no less rigorous than those safeguards and procedures maintained by Company prior to the Commencement Date of the applicable Services (or, if a SOW, the Execution Date) and shall be no less rigorous than those maintained by Provider for its own data and information of a similar nature, but in no event less than reasonable care.

(b) Security Assessment - Without limiting the generality of the foregoing, Provider's information security policies shall provide for (i) regular assessment and re-assessment of the risks to the security of Company Confidential Information and systems acquired or maintained by Provider and its agents and contractors, including (A) identification of internal and external threats that could result in a Security Breach, (B) assessment of the likelihood and potential damage of such threats, taking into account the sensitivity of such data and systems, and (C) assessment of the sufficiency of policies, procedures, and information systems of Provider and its Affiliates and subcontractors, and other arrangements in place, to control risks; and (ii) protection against such risks.

(c) Media - Provider shall remove all Company Confidential Information from any media taken out of service and shall destroy or securely erase such media in accordance with the Company Security Requirements and otherwise in a manner designed to protect against unauthorized access to or use of any Company Confidential Information in connection with such destruction or erasure.

(d) Security Breach - In the event Provider becomes aware of any Security Breach due to Provider acts or omissions other than in accordance with the terms of the Contract Documents, Provider shall, at its own expense, (i) immediately notify Company's Project Manager and Chief Information Officer of such Security Breach in accordance with the Notice provision of this Master Agreement and perform a root cause analysis thereon; (ii) investigate such Security Breach and report its findings to Company; (iii) provide Company with a remediation plan, acceptable to Company, to address the Security Breach and prevent any further incidents; (iv) remediate such Security Breach in accordance with such approved plan; (v) conduct a forensic investigation to determine what systems, data and information have been affected by such event; and (vi) cooperate with Company and, at Company's request, any law enforcement or regulatory officials, credit reporting companies, and credit card associations investigating such Security Breach. Without limiting the foregoing and notwithstanding anything herein to the contrary, Company shall make the final decision on notifying Company's customers, employees, service providers and/or the general public of such Security Breach, and the implementation of the remediation plan. If a notification to a customer is required under any Law or pursuant to any of Company's privacy or security policies, then notifications to all customers who are affected by the same event (as reasonably determined by Company) shall be considered legally required. Provider shall reimburse Company on demand for all reasonable Notification Related Costs incurred by Company arising out of or in connection with any such Security Breach resulting in a requirement for legally required notifications (as determined in accordance with the previous sentence). In the event that Provider becomes aware of any Security Breach which is not due to Provider acts or omissions other than in accordance with the terms of the Contract Documents, Provider shall immediately notify Company of such Security Breach, and the Parties shall reasonably cooperate regarding which of the foregoing or other activities may be appropriate under the circumstances, including any applicable Charges for the same. Provider shall notify Company within five (5) Business Days of the commencement of any investigation of its use of Personally Identifiable Information or security practices by any Governmental Authority or self-regulatory organization, any material change in such investigation and the results of such investigation.

(e) Intrusion Detection/Interception - Provider will provide Company and its representatives with access to Provider's Information Systems, policies and procedures relating to intrusion detection and interception with respect to the Provider Information Systems used to provide the Services for the purpose of examining, testing and assessing those Provider Information Systems, policies and procedures in accordance with Section 8.5 (Inspections and Audits) of this Master Agreement.

10.4. Limitation

The covenants of confidentiality and other restrictive covenants set forth herein (a) will apply after the Effective Date to any Confidential Information disclosed to the Receiving Party before and after the Effective Date and (b) will continue and must be maintained in perpetuity.

10.5. Injunctive Relief

Provider acknowledges that its violation of Article 10 (Confidentiality and Data) would cause irreparable harm, the amount of which would be impossible to estimate, thus making any remedy at law or in damages inadequate. Provider therefore agrees that Company shall have the right to apply to any court of competent jurisdiction for and be granted an injunction compelling specific performance by Provider of its obligations under the Contract Documents, including without limitation, and/or the applicable SOW without the necessity of notice posting any bond or other security, and Provider agrees not to request such bond or other security. This right will be in addition to any other remedy available under the Contract Documents, at law or in equity (including the right to recover damages).

11. TERMINATION

11.1. Termination by Company

Company may terminate the Master Agreement, any SOW or Work Authorization, in whole or in part, for any of the following reasons:

(a) Material Breach - Upon written notice, if a material breach of the Contract Documents by Provider remains uncured for ten (10) days after receipt of written notice thereof by Company to Provider, or the occurrence of a Service Level Termination Event as defined in the applicable "Service Level Agreement" included in the applicable SOW; or

(b) Persistent Breach - Upon written notice, if there exists a series of material breaches that are cured within the permissible periods, or non-material persistent breaches, of the Contract Documents by Provider that in the aggregate constitute a material breach or have a material adverse impact on the Services or (i) on the administrative, management, planning, financial reporting or operations functions of the Company or the portion of the Company constituting the user of the applicable Services; (ii) on the functions of the Company comprising the applicable Services; or (iii) the financial performance of the portion of the Company constituting the user of the applicable Services; or

(c) Convenience - For convenience with respect to any part of the Services upon one hundred twenty (120) days prior written notice of the effective date of such termination, by Company to Provider; or

(d) Insolvency - Upon written notice to Provider if Provider or any subcontractor of Provider performing a material portion of the Services becomes insolvent or is unable to pay its debts or enters into or files (or has filed or commenced against it) a petition, arrangement, application, action or other proceeding seeking relief or protection under the bankruptcy laws of the United States or any similar laws of the United States or any state of the United States or transfers all or substantially all of its assets to another person or entity; or

(e) Change of Control of Provider - In the event of a Change of Control of Provider, upon one hundred twenty (120) days prior written notice to Provider given not later than one hundred eighty (180) days after Provider's written notice to Company of the occurrence of such Change of Control; or

(f) Force Majeure Failure - If any Force Majeure Event lasts longer than five (5) consecutive days, or if Force Majeure events in the aggregate last more than thirty (30) days in any twelve (12) month period, and Company determines in good faith that such Force Majeure Event substantially prevents, hinders or delays Provider's performance of any of the Services, then Company may upon written notice terminate this Master Agreement as a whole, or all or any portion of the affected SOW; or

(g) Service Level Termination Event - Under the circumstances set forth in the applicable "Service Level Agreement" Exhibit.

11.2. Termination by Provider

Provider may terminate the affected Services described in a Work Authorization, including in any SOW, in whole or in part, for any of the following reasons:

(a) Non-payment - Provider may terminate the affected Services described in the applicable SOW for cause if Company does not pay material undisputed amounts under such SOW when due; provided, however that (i) such termination shall be effective no earlier than thirty (30) days after Company's receipt of Provider's written notice of its intent to terminate the applicable SOW for nonpayment and (ii) Company has the right to cure any nonpayment within such thirty-day period in which case Provider shall not have the right to proceed with the termination.

(b) Material Breach – Upon written notice, if a material breach of the Contract Documents by Company (other than non-payment) remains uncured for thirty (30) days after receipt of written notice thereof by Provider to Company; provided, however, if a cure cannot be completed within such thirty-day period and the Company is working in good faith to cure such breach, the Provider will give the Company an opportunity to develop and implement a corrective action plan within a timeframe to be designated by the parties in writing.

11.3. Effect of Termination

(a) Company shall not be obligated to pay any Charges that would otherwise accrue and be payable by Company pursuant to the Contract Documents after the effective date of the expiration or termination of the Master Agreement or any such SOW. In the event of any SOW termination, the Charges for the portion of the Services so terminated shall be removed from the applicable "Price" Exhibit and any other terms shall be equitably adjusted to reflect the termination of such portion of the Services.

(b) Company's right to terminate this Master Agreement or any SOW for convenience in accordance with Section 11.1(c) shall be without any obligation or liability to Provider other than the payment to Provider of (1) all fees due and payable through the termination date and (2) wind-down expenses, which mean the net amount, after Provider takes commercially reasonable action to mitigate the adverse financial impact on Provider, that will reimburse Provider for the actual reasonable cost that Provider incurs in the disposition and/or reallocation of Provider materials and the portion of any facilities in Hawaii dedicated to the performance of the Services, the placement of Provider personnel allocated to the delivery of the Services, and the termination, if appropriate, of the Third Party Agreements, in the event of a termination occurring prior to the expiration of the Term; provided, however that the Company shall have the right to mitigate such costs by purchase of, or assumption of the leases for any such facilities, hiring the Provider personnel dedicated to the performance of the Services, and assuming Third Party Agreements used by Provider to perform and deliver the Services and taking similar actions.

11.4. Survival of Selected Provisions

(a) Survival - Notwithstanding the expiration or earlier termination of the Services, the Master Agreement or any SOW for any reason however described, the following Sections of the Master Agreement shall survive any such expiration or termination: Section 2.1 (Term of Agreement), Section 9 (Technology; Intellectual Property), Section 10 (Confidentiality and Data), Section 11.3 (Effect of Termination), Section 11.4 (Survival Of Selected Provisions), Section 12 (Liability), Section 13 (Indemnities), Section 14 (Insurance; Title and Risk of Loss) Section 15 (Dispute Resolution), and Section 17 (General). Upon termination or expiration of the Master Agreement, all rights and obligations of the Parties under the Master Agreement shall expire, except those rights and obligations under those Sections specifically designated to survive in this Section 11.4(a).

12. LIABILITY

12.1. Limits on Liability

(a) Liability Cap. Except as provided in Section 12.1(b) (Exceptions to Liability Cap), and notwithstanding any other provision of the Contract Documents, the liability of each Party and its employees to the other for any and all claims, damages, injuries, costs, expenses and other Losses ("collectively, "**Subject Damages**") arising out of or relating to any and/or all Work Authorizations executed hereunder (including, but not limited to, breach, performance or non-performance by the Party and its subcontractors under the Contract Documents), from any and all cause or causes, –regardless of how the causes(s) of action is or are characterized (for example, but not limited to, in negligence, errors and omissions, tort, strict liability, breach of contract, breach of warranty, or guarantee), shall, to the fullest extent permitted by law, be limited to the following dollar amounts:

(i) For any and all Subject Damages arising out of or relating to any and/or all Work Authorizations executed under this Master Agreement, the dollar limit per claim shall be as follows ("Contract Price" as follows shall mean the total not to exceed price (i.e., dollar amount) set forth under the applicable Work Authorization):

CONTRACT PRICE (CP)	DOLLAR LIABILITY LIMIT PER CLAIM
LESS THAN $50,000	3 X CP

$50,001 - $250,000	2 X CP OR $150,000 (whichever is greater)
$250,001 AND GREATER	1 X CP OR $500,000 (whichever is greater)

(b) Exceptions to Liability Cap. Notwithstanding any provision of the Contract Documents to the contrary, the limitations of liability set forth in Section 12.1(a) (Liability Cap) shall not apply to or limit: (i) a Party's indemnity obligations to the other Party under Article 13 (Indemnities) of this Master Agreement; (ii) damages or liabilities arising from the gross negligence, fraud or willful misconduct of the Party; (iii) damages or liabilities arising from personal injury (including death) or damage to real property or tangible personal property caused by the Party, or (iv) damages or liabilities arising from any breach of confidentiality obligations under this Master Agreement, and (v) recovery of any attorneys' fees and costs awarded pursuant to Law to a prevailing party in an action or proceeding enforcing or based on this Master Agreement.

(c) Exclusion of Certain Damages. Notwithstanding any provision of the Contract Documents to the contrary, to the fullest extent permitted by law, in no event shall a Party or its employees be liable to the other under this Master Agreement and/or any Work Authorization executed hereunder for any damages that are punitive or exemplary or any special, indirect, incidental or consequential damages even if advised of the possibility of such damages.

13. INDEMNITIES

13.1. Indemnity by Provider

To the full extent allowed by applicable law, Provider will indemnify and hold harmless Company, its Affiliates, and the respective current, future and former officers, directors, employees, agents, successors and assigns of each of the foregoing, and each of the foregoing persons or entities (the "**Company Indemnitees**") on demand, from and against any and all Losses incurred by any of them as a result of the following Third Party Claims, and shall defend the Company Indemnitees against the following Claims:

(a) all Claims that any Provider Information System, Work Product, Services or any other item, information, system, deliverable, software or service provided or used under the Contract Documents by Provider (or any Provider Affiliate, agent, contractor, subcontractor or representative), or Company's use thereof (or access or other rights thereto) in connection with the Services or any Third Party's use thereof authorized by Provider in any circumstance, infringes or misappropriates a United States patent, trademark or copyright of a Third Party provided however, Provider shall have no liability or obligation to any of the Company Indemnitees under this Section 13.1(a)(i) to the extent the claim of infringement or misappropriation is caused by; (A) such Company Indemnitee's unauthorized use or modification of such item; or (B) such Company Indemnitee's use of such item in combination with any product or equipment not owned, developed, contemplated or authorized by Provider or (ii) with respect to any item provided by Company. If any deliverable or item provided by Provider hereunder is held to constitute, or in Provider's reasonable judgment is likely to constitute, an infringement or misappropriation, Provider will in addition to its indemnity obligations, at its expense and option, and after consultation with Company regarding Company's preference in such event, either: (w) procure the right for Company Indemnitees to continue using such Service, deliverable or item; (x) replace such Service deliverable or item with a non-infringing equivalent, provided that such replacement does not result in a degradation of the functionality, performance or quality of the Service, deliverable or item; (y)

modify such deliverable item, or have such deliverable or item modified, to make it non-infringing, provided that such modification does not result in a degradation of the functionality, performance or quality of the deliverable or item; or (z) create a feasible workaround that would not have any adverse impact on the Company. THIS IS THE EXCLUSIVE REMEDY AVAILABLE TO THE COMPANY AS WELL AS PROVIDER'S ENTIRE OBLIGATION AND LIABILITY IN CASE OF AN INFRINGEMENT OR MISAPPROPRIATION CLAIM.

(b) all Claims by subcontractors of Provider or any of its Affiliates, or by employees of Provider or any of its Affiliates arising out of or relating to the Contract Documents or the Services to the extent such Claims and related Losses are caused by the acts or omissions of Provider, and except to the extent of any Losses caused by the negligence or willful misconduct of the Company or any of its Affiliates, employees or subcontractors (other than Provider and its Affiliates and subcontractors);

(c) all Claims to the extent arising out of or resulting from any act or omission of Provider in its capacity as an employer or purported employer of a Person and arising out of or relating to (i) Laws for the protection of Persons who are members of a protected class or category of Persons, (ii) sexual discrimination or harassment, and (iii) any other aspect of the employment relationship or its termination (including claims for breach of an express or implied contract of employment) which arose when the Person asserting the claim, demand, charge, actions, cause of action or other proceeding was or purported to be an employee of, or candidate for employment by, the Provider;

(d) all Claims related to personal or real property damage to the extent resulting from or arising out of the acts of Provider's employees, subcontractors or Affiliates, while present on Company facilities, whether occurring within or outside of the scope of such employee's, subcontractor's and/or Affiliate's responsibilities in connection with their provision of the Services.

(e) all Claims for personal injuries, death or damage to tangible or intangible personal or real property, including claims of any employee of Company or any Company Affiliate (or their respective subcontractors), to the extent such Claims and related Losses are caused by acts or omissions of Provider or any of its Affiliates or subcontractors related to the Contract Documents or Services;

(f) all Claims to the extent arising from Provider's or any of its subcontractors or Affiliates' violation of any Law applicable to Provider or the provision of the Services, excluding any such violations caused by a breach of the Contract Documents by Company, together with all liability, fines damages, costs or expenses incurred by Company arising from failure to comply with Section 3.2(a) by Provider or any of its subcontractors (even though such liability, fines, damages, costs and expenses are not Claims);

(g) all Claims to the extent arising from the fraud, theft or the willful misconduct of, Provider or its Affiliates or subcontractors or the employees of any of the foregoing;

(h) all Claims for Provider's Tax liabilities arising from Provider's provision of Services, as set forth in Section 4.2 (Taxes);

(i) all Claims arising from Provider's failure to remit promptly Taxes paid by the Company to Provider to the applicable taxing authority as described in Section 4.2(a)(Responsibility);

(j) all Claims that any personnel supplied by Provider, its Affiliates and/or their subcontractors under the Contract Documents is an employee or agent of Company, to the extent such Claims arise from the acts or omissions of Provider, including, but not limited to; (i) the cost of any additional compensation or employee benefits Company is required to provide to or pay for on behalf of any personnel supplied by Provider, its Affiliates and/or their subcontractors; and (ii) any Claim brought by any personnel supplied by Provider, its Affiliates and/or subcontractors against Company based upon the employer-employee relationship, to the extent such Claims arise from the acts or omissions of Provider, and except for any such Claims and related Losses that arise out of or result from any acts or omissions of the Company;

(k) all Claims arising out of any Security Breach by Provider or any of its Affiliates or subcontractors (including all Notification Related Costs) to the extent such Claims and resulting Losses are caused by Provider's or its Affiliates or subcontractors' acts or omissions other than in accordance with the terms of the Contract Documents; and

(l) all Claims arising out of Provider's failure to comply with the terms of Section 8.4 (Contract Management) or Provider's use in performing and/or providing the Services to the Company of products, services or license rights under the Third Party Agreements, to the extent due to Provider's breach of the Third Party Agreement for such products, services or license rights.

13.2. Indemnity by Company

To the full extent allowed by applicable law, Company will indemnify and hold harmless Provider and its Affiliates, and the respective current, future and former officers, directors, employees, agents, successors and assigns of each of the foregoing, and each of the foregoing persons or entities (the "**Provider Indemnitees**") on demand, from and against any and all Losses incurred by any of them and shall defend the Provider Indemnitees against all Third Party Claims arising from or in connection with:

(a) all Claims that any Company Software, or Provider's or its subcontractor's access and/or use thereof in accordance with the terms of the Contract Documents, infringes or misappropriates A United States patent, trademark or copyright of a Third Party; provided, however, Company shall have no liability or obligation to any of the Provider Indemnitees under this Section 13.2(a) (i) to the extent that the claim of infringement or misappropriation is caused solely by: (A) such Provider Indemnitee's or its subcontractors' unauthorized modification of such item; or (B) such Provider Indemnitee's or its subcontractors' use of such item in combination with any product or equipment not owned, developed, contemplated or authorized by Company, or (ii) with respect to any Company Software incorporated in any Work Product. If any Company Software provided by Company hereunder is held to constitute, or in Company's reasonable judgment is likely to constitute, an infringement or misappropriation, Company will in addition to its indemnity obligations, at its expense and option, and after consultation with Provider regarding Provider's preference in such event, either: (w) procure the right for Provider Indemnitees to continue using such Company Software; (x) replace such Company Software with a non-infringing equivalent, provided that such replacement does not result in a

degradation of the functionality, performance or quality of the deliverable or item; (y) modify such Company Software, or have such Company Software modified, to make it non-infringing, provided that such modification does not result in a degradation of the functionality, performance or quality of the Company Software; or (z) create a feasible workaround that would not have any adverse impact on Provider THIS IS THE EXCLUSIVE REMEDY AVAILABLE TO PROVIDER AS WELL AS COMPANY'S ENTIRE OBLIGATION AND LIABILITY IN CASE OF AN INFRINGEMENT OR MISAPPROPRIATION CLAIM;

(b) all Claims by subcontractors of Company or any of its Affiliates, or by employees of Company or any of its Affiliates arising out of or relating to the Contract Documents or the Services to the extent such Claims and related Losses are caused by the acts or omissions of Company, and except to the extent of any Losses caused by the negligence or willful misconduct of Provider or any of its Affiliates, employees or subcontractors (other than Company and its Affiliates and subcontractors);

(c) all Claims to the extent arising out of or resulting from any act or omission of Company in its capacity as an employer or purported employer of a Person and arising out of or relating to (i) Laws for the protection of Persons who are members of a protected class or category of Persons, (ii) sexual discrimination or harassment, and (iii) any other aspect of the employment relationship or its termination (including claims for breach of an express or implied contract of employment) which arose when the Person asserting the claim, demand, charge, actions, cause of action or other proceeding was or purported to be an employee of, or candidate for employment by, Company;

(d) all Claims related to personal or real property damage to the extent resulting from or arising out of the acts of Company's employees, subcontractors or Affiliates, while present on Company facilities, whether occurring within or outside of the scope of such employee's, subcontractor's and/or Affiliate's responsibilities in connection with their provision of the Services;

(e) all Claims for personal injuries, death or damage to tangible or intangible personal or real property, including claims of any employee of Provider or any Provider Affiliate (or their respective subcontractors), to the extent such Claims and related Losses are caused by acts or omissions of Company or any of its Affiliates or subcontractors related to the Contract Documents or Services;

(f) all Claims to the extent arising from Company's or any of its subcontractors or Affiliates' violation of any Law applicable to Company or the provision of the Services, excluding any such violations caused by a breach of the Contract Documents by Provider, together with all liability, fines damages, costs or expenses incurred by Provider arising from any and all such violations of Law (even though such liability, fines, damages, costs and expenses are not Claims);

(g) all Claims to the extent arising from the fraud, theft or the willful misconduct of, Company or its Affiliates or subcontractors or the employees of any of the foregoing;

(h) all Claims for Company's Tax liabilities arising in connection with the Services as set forth in Section 4.2(Taxes);

(i) all Claims arising from Company's failure to remit promptly Taxes paid by Provider to Company to the applicable taxing authority as described in Section 4.2(a)(Responsibility); and

(j) all Claims that any personnel supplied by Company, its Affiliates and/or their subcontractors under the Contract Documents is an employee or agent of Provider, to the extent such Claims arise from the acts or omissions of Company, including, but not limited to; (i) the cost of any additional compensation or employee benefits Provider is required to provide to or pay for on behalf of any personnel supplied by Company, its Affiliates and/or their subcontractors; and (ii) any Claim brought by any personnel supplied by Company, its Affiliates and/or subcontractors against Provider based upon the employer-employee relationship, to the extent such Claims arise from the acts or omissions of Company, and except for any such Claims and related Losses that arise out of or result from any acts or omissions of Provider.

13.3. Indemnification Procedures

(a) To receive the indemnities contained in this Article 13 (Indemnities), an indemnified Party hereunder shall promptly notify, in writing, the indemnifying Party of any Claim with respect to which it seeks indemnity under this Article 13 (Indemnities) and provide reasonable cooperation (at the indemnifying Party's expense) and full authority to defend or settle the Claim or suite in accordance with this Section 13.3 (Indemnification Procedures). An indemnifying Party may participate, at its own expense, in the defense of such Claim. If it so elects within a reasonable time after receipt of such notice, an indemnifying Party may, except as provided in the immediately following sentence and the last sentence of this paragraph, assume the defense of such Claim, with counsel reasonably satisfactory to the indemnified Party to represent the indemnified Party and any others the indemnifying Party may designate in such proceeding and shall pay the fees and disbursements of such counsel related to such proceeding. In any such proceeding, any indemnified Party shall have the right to retain its own counsel, but the fees and expense of such counsel shall be at the expense of such indemnified Party unless (i) the indemnifying Party and the indemnified Party shall have mutually agreed to the retention of such counsel or (ii) the named Parties to any such proceeding (including any impleaded parties) include both the indemnifying Party and the indemnified Party and representation of both Parties by the same counsel would be an impermissible conflict of interest under applicable professional rules governing legal counsel. It is agreed that the indemnifying Party shall not, in respect of the legal expense of any indemnified Party in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the fees and expenses of more than one separate firm (in addition to any local counsel) for all such indemnified Parties and that all such fees and expenses shall be reimbursed as they are incurred.

(b) The indemnifying Party shall not be liable for any settlement of any proceeding affected without its written consent, but if settled with such consent or if there is a final judgment for the plaintiff, the indemnifying Party agrees to indemnify the indemnified Party from and against any Loss by reason of such settlement or judgment. Without the prior written consent of the indemnified Party, no indemnifying Party shall consent to any settlement of any pending or threatened proceeding that provides for injunctive relief or other non-monetary relief in respect of which any indemnified Party is or could have been a party and indemnity could have been sought hereunder by such indemnified Party, including without limitation, if such settlement (i) involves any finding or admission of any violation of any Law or any of the rights of any person, (ii) releases any claim(s) of the indemnified Party or (iii) has any adverse effect on

any other Claims that have been or may be made against the indemnified Party, or (iv) if such settlement involves only the payment of money, unless it includes an unconditional release of such indemnified Party of all liability on claims that are the subject of such proceeding.

(c) An indemnified Party may assume control of the defense of any Claim if (i) it irrevocably waives its right to indemnity for that Claim under this Article 13 (Indemnities), or (ii) without prejudice to its full right to indemnity hereunder, if (A) the indemnifying Party fails to provide reasonable assurance to the indemnified Party of its financial capacity to defend or provide indemnification with respect to such Claim, (B) the indemnified Party determines in good faith that there is a reasonable likelihood that a Claim would materially and adversely affect it or any other indemnities other than as a result of monetary damages that would be fully reimbursed by an indemnifying Party under the Master Agreement, or (C) the indemnifying Party refuses or fails to timely assume the defense of such Claim.

(d) An indemnifying Party required to provide an indemnity to an indemnified Party under this Article 13 (Indemnities) shall have no obligation for any Claim under this Section if:

(i) the indemnified Party fails to notify the indemnifying Party of such Claim as provided above, but only to the extent that the defense of such Claim is prejudiced by such failure;

(ii) the indemnified Party fails to tender control of the defense of such Claim to the indemnifying Party as provided in this Section 13.3 (Indemnification Procedures); or

(iii) the indemnified Party fails to provide the indemnifying Party with reasonable cooperation in the defense of such Claim (the cost thereof to be borne by the indemnifying Party).

14. INSURANCE, TITLE AND RISK OF LOSS

14.1. Provider Insurance

(a) Workers' Compensation - (i) Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization, Workers' Compensation and other similar insurance required by state or federal laws. In the event that Provider fails to maintain such insurance as required by law, Provider acknowledges and agrees that it will not seek or be entitled to any coverage under the Company's insurance. Permissible self-insurance will be acceptable subject to submission of a copy of appropriate governmental authorization and qualification by Provider.

(ii) In addition, if Workers' Compensation is required, Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization, Employers Liability insurance with minimum limits for bodily injury from accident of FIVE HUNDRED THOUSAND DOLLARS ($500,000) - each accident; for bodily injury from disease of FIVE HUNDRED THOUSAND DOLLARS ($500,000) - each employee; and for bodily injury from disease of FIVE HUNDRED THOUSAND DOLLARS ($500,000) - each policy limit; or other minimum limits as specified in the Work Authorizations.

(b) Commercial General Liability Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization, Commercial General Liability insurance with a bodily injury and property damage combined single limit of liability of at least FIVE MILLION DOLLARS ($5,000,000) or other minimum limits as specified in the Work Authorizations for any occurrence. Such insurance will include coverage in like amount for products/completed operations, contractual liability, and personal and advertising injury. "Claims made" policies are not acceptable under this section.

(c) Automobile Liability Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full effect at all times during the term of each Work Authorization, Automobile Liability insurance with a bodily injury and property damage combined single limit of at least ONE MILLION DOLLARS ($1,000,000) or other minimum limits as specified in the Work Authorizations per accident.

(d) Professional Liabilities/Errors and Omissions Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain Professional Liability/Errors and Omissions insurance with minimum limits of TEN MILLION DOLLARS ($10,000,000) per occurrence and per policy aggregate. Such insurance shall include coverage for claims or losses with respect to or resulting directly or indirectly from the performance or nonperformance of Services under the Contract Documents including but not limited to software development and enhancement, and intellectual property infringement or misappropriation such as copyrights, trademarks, service marks, and trade dress, however excludes trade secrets and patent infringement. The retroactive coverage date of the insurance policy shall be no later than the Effective Date of this Master Agreement. Such insurance shall remain in effect after termination of this Master Agreement in order to respond to any claims or losses subsequently made. Insurance required by this subsection shall be maintained in full effect at all times during the term of each Work Authorization and for THREE (3) years thereafter.

(e) Network Security/Privacy Liability Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization Network Security/Privacy Liability insurance, with minimum limits of TWENTY FIVE MILLION DOLLARS ($25,000,000) per occurrence and per policy aggregate. Such insurance shall include, but not be limited to network risks such as data breaches, data theft, unauthorized access/use, negligent transmission of a computer virus, identity theft, and any invasion, violation, breach or infringement of any right to privacy resulting from both electronic and non-electronic events with respect to any personally identifiable information in any form. The retroactive coverage date of the insurance policy shall be no later than the Effective Date of this Master Agreement. Such insurance shall remain in effect after termination of this Master Agreement in order to respond to any claims or losses subsequently made.

(f) Commercial Crime Insurance - Provider and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times during the term of each Work Authorization Commercial Crime Insurance with minimum limits of TWO MILLION DOLLARS ($2,000,000) per occurrence covering dishonest acts of employees, agents, contractors and subcontractors. Such insurance shall also include third party coverage as it pertains to Company’s money, securities, or other property. Such insurance shall remain in effect after termination of this Master Agreement in order to respond to any claims or losses subsequently made.

14.2. Other Conditions

(a) Waiver of Subrogation - Provider and anyone acting under its direction or control or on its behalf will cause its insurers (except for Workers' Compensation and Professional Errors and Omissions insurance) to waive all rights of subrogation which Provider or its insurers may have against Company, Company's agents, or Company's employees.

(b) Certificates of Insurance - Concurrent with the execution of this Master Agreement, Provider shall provide Company with a certificate of insurance ("**COI**") certifying that each of the foregoing insurance coverages is in force. If the COI is not affixed to this Master Agreement, then Provider shall provide a copy of the COI (and any subsequent updates) to Company's Legal Department (at: P.O. Box 2750, Honolulu, Hawaii 96840-001). The COI MUST reference this Master Agreement contact number and the date of this Master Agreement and it shall reference Provider by name. Provider will immediately provide written notice to the Company should any of the insurance policies required herein be cancelled, limited in scope, or not renewed upon expiration. Receipt of any certificate showing less coverage than requested is not a waiver of the Provider's obligation to fulfill the requirements

(c) Rating - The insurance required under this Master Agreement shall be provided by insurance companies that have a minimum A.M. Best Rating of A-VII.

(d) Coverage - Provider and any contractor or subcontractor shall be responsible for payment of any and all deductibles, self-insured retentions, and self-insurance carried by each of them under their respective insurance program(s). The coverage afforded under any insurance policy obtained by any of them pursuant to the Contract Documents shall be primary and not be in excess of, or contributing with, any insurance maintained by Company and its assigns. Provider and its contractors or subcontractors acting under its direction, control or on its behalf shall not perform Services under the Master Agreement without the prerequisite insurance. Unless previously agreed to in writing by Company, Provider and its contractors or subcontractors acting under its direction, control or on its behalf shall comply with the insurance requirements herein and Provider agrees to be solely responsible for any deficiencies in the coverage, policy limits and endorsements of its contractors or subcontractors performing any portion of the Services under the Contract Documents.

(e) Survival - Notwithstanding any other provision in the Contract Documents to the contrary, the obligations to indemnify and hold harmless or to maintain required insurance coverages shall survive the expiration or termination of this Master Agreement to the extent necessary to cover claims or losses arising in connection this Contract Documents.

(f) Waiver of Defense - To the extent Provider's indemnification obligations apply, without limitation, to injuries, deaths, or accidents involving Provider's employees, contractors, or subcontractors that may arise directly or indirectly as a result of the performance of Services, Provider, its contractors or subcontractors, waive as a defense any immunity that it may have or claim under any state laws or regulations related to workers' compensation or employee injuries.

14.3. Title

Title and ownership of the Materials shall pass to Company upon delivery to and acceptance by Company thereof.

14.4. Risk of Loss

Risk of loss to the Materials shall pass to Company upon delivery to and acceptance by Company. Provider is responsible for and shall bear all risk of loss or damage to Materials, and all materials, tools and Materials delivered to Company until the acceptance by the Company except to the extent that such loss or damage results from Company's negligence. Company is not responsible for any loss or damage to the Materials prior to acceptance, or to materials, tools Equipment of Provider or its subcontractors resulting from a tortious action of any Third Parties. Risk of loss to the Provider Information System shall remain with the Provider.

15. DISPUTE RESOLUTION

15.1. Procedure

(a) Procedure. Except for the right of either Party to apply to a court of competent jurisdiction for injunctive relief, any controversy or claim arising out of or relating to the Contract Documents, other than as to ownership or title to Intellectual Property Rights, breach of the protections of the Confidential Information, or a Party's failure to provide the indemnity obligations herein, either Party shall first, prior to filing a lawsuit (except as previously provided) attempt to resolve a Dispute hereunder as follows. In the event of a Dispute that has not been resolved in accordance with any dispute resolution provisions in the applicable SOW, the Parties will adhere to the following procedure set forth in this section prior to initiating any available remedies.

(b) Notice. Either Party may notify the other Party in writing of the occurrence of a Dispute and establish a mutually convenient time and place to discuss the Dispute. In any event, the meeting will occur within a commercially reasonable period of time (not to exceed thirty (30) days) after the notice of Dispute is delivered ("**Notice Date**") and shall take place between Provider's Chief Financial Officer, and Company's Senior Vice President of Operations, or such other executive identified in a Work Authorization..

(c) Escalation. If the meeting does not resolve the Dispute, either Party may then give the other Party written notice that the dispute continues. Within a commercially reasonable period of time after such notice, which shall not exceed thirty (30) days, designated executives from each Party will meet to discuss the issue at a mutually convenient time and place. Such executives shall be at each Party's vice president level or above. If the Dispute has not been resolved within a commercially reasonable period of time, which shall not to exceed sixty (60) days (or such other time that the Parties mutually agree upon in writing) after the Notice Date, either Party may pursue applicable remedies under the Contract Documents, at law or in equity.

15.2. Continued Performance

Except where directly prevented from doing so by the matter in Dispute, Provider agrees to continue performing its obligations under the Contract Documents while any Dispute

is being resolved unless and until such obligations are terminated by the termination or expiration of the Master Agreement.

15.3. Exceptions to Dispute Resolution Procedures

Notwithstanding any other provision of the Contract Documents, either Party may resort to court action for injunctive relief at any time if, in such Party's good faith belief, the Dispute Resolution Procedures would permit or cause irreparable injury to such Party or any Third Party claiming against such Party, due to delay arising out of the Dispute Resolution Procedures.

16. *INTENTIONALLY OMITTED*

17. GENERAL

17.1. Relationship of Parties

(a) No Joint Venture - The Contract Documents (including without limitation the SOW) shall not be construed as constituting either Party as partner, joint venture or fiduciary of the other Party or to create any other form of legal association that would impose liability upon one Party for the act or failure to act of the other Party, or as providing either Party with the right, power or authority (express or implied) to create any duty or obligation of the other Party.

(b) Publicity - Each Party will submit to the other Party all advertising, written sales promotion, press releases and other publicity matters relating to the Contract Documents in which the other Party's name or marks are mentioned or language from which the connection of such name or marks may be inferred or implied, and will not publish or use such advertising, sales promotion, press releases, or publicity matters without prior written approval of the other Party.

17.2. Entire Agreement

The Contract Documents shall constitute the entire understanding between the parties, superseding any and all previous understandings, oral or written, pertaining to the subject matter contained herein. The parties have entered into this Master Agreement and the Contract Documents in reliance upon the representations and mutual undertakings contained herein and therein and not in reliance upon any oral or written representation or information provided to one Party by any representative of the other Party. Neither Party shall claim at any time that it entered into this Master Agreement or the other Contract Documents in whole or in part based on any representation not stated in those documents.

17.3. Force Majeure

(a) Generally - Each Party will be excused from performance under the Contract Documents for any period and to the extent (and only to the extent) that it is prevented from or delayed in performing any obligations pursuant to the Contract Documents, in whole or

in part, as a result of a Force Majeure Event. If either Party is prevented from, or delayed in performing any of its obligations under the Contract Documents by a Force Majeure Event, the Party claiming the Force Majeure Event has occurred shall promptly notify the other Party verbally (to be confirmed in writing within twenty-four (24) hours of the inception of the delay) of the occurrence of a Force Majeure Event and describe, in reasonable detail, the circumstances constituting the Force Majeure Event and of the obligations, the performance of which are thereby delayed or prevented. The Party claiming that a Force Majeure Event has occurred shall continue to use commercially reasonable efforts to mitigate the impact or consequence of the event on the other Party and to recommence performance whenever and to whatever extent possible without delay. The affected Party shall provide the other Party with daily updates (and more frequent updates if requested) as to the status of its efforts to recommence performance and written notice upon conclusion of the Force Majeure Event. Subject to Section 17.3 (c) (Extended Nonperformance) below, in the event of any Force Majeure Event, Company shall not pay any Charges in respect of the Services so affected, provided that Company shall pay the Provider for the Services rendered under this Master Agreement prior to such Force Majeure Event.

(b) Exclusions. Notwithstanding any other provision of this section, the non-performing Party shall not be excused under this Section 17.3 (Force Majeure) for (i) any non-performance of its obligations under the Contract Documents having a greater scope or longer period than is justified by the Force Majeure Event, or (ii) the performance of obligations that should have been performed prior to the Force Majeure Event.

(c) Extended Nonperformance - If Company determines in good faith that a Force Majeure Event substantially prevents, hinders or delays Provider's performance of any Services for more than twenty-four (24) consecutive hours or more than thirty-six (36) hours in a thirty (30) day period, then Company has the right to terminate the affected Services in whole or in part.

(d) Definition - The term "**Force Majeure Event**" as used herein shall mean any cause beyond the control and not due to the fault or negligence of the Party affected, and which by reasonable efforts the Party affected is unable to overcome, including without limitation the following: acts of God; fire, flood, landslide, lightning, earthquake, hurricane, tornado, storm, freeze, volcanic eruption or drought; blight, famine, epidemic or quarantine; act or failure to act of the other Party; theft; casualty; war; invasion; civil disturbance; explosion; acts of public enemies; or sabotage.

17.4. Waiver

No waiver of any breach of any provision of the Master Agreement or any other Contract Documents shall constitute a waiver of any prior, concurrent or subsequent breach of the same or any other provisions hereof.

17.5. Severability

If any provision of the Master Agreement or any other Contract Documents shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby, and such provision shall be deemed to be restated to reflect the Parties' original intentions as nearly as possible in accordance with applicable Law(s).

17.6. Counterparts

The parties agree that this Master Agreement, all Work Authorizations and other Contract Documents hereunder may be executed in counterparts, each of which shall be deemed an original, and all of which shall together constitute one and the same instrument binding all parties notwithstanding that all of the parties are not signatories to the same counterparts. For all purposes, duplicate unexecuted and unacknowledged pages of the counterparts may be discarded and the remaining pages assembled as one document. This Master Agreement, Work Authorizations and other Contract Documents may also be executed by exchange of executed copies via facsimile or other electronic means, such as PDF, in which case, but not as a condition to the validity of the Master Agreement, each Party shall subsequently send the other Party by mail the original executed copy. A Party's signature transmitted by facsimile or similar electronic means shall be considered an "original" signature for purposes of the Contract Documents.

17.7. Binding Nature and Assignment

The Contract Documents will be binding on the Parties and their respective successors and permitted assigns. Except as provided in this Section 17.7 (Binding Nature and Assignment) neither Party may, or will have the power to, assign any of the Contract Documents (or any rights thereunder) by operation of law or otherwise without the prior written consent of the other, except that Company may assign its rights and delegate its duties and obligations under this Master Agreement (i) to an Affiliate or (ii) as a whole as part of the sale or transfer of all or substantially all of its assets and business, including by merger or consolidation with a Person that assumes and has the ability to perform Company's duties and obligations under the Contract Documents, without the approval of Provider. Any attempted assignment that does not comply with the terms of this Section 17.7 (Binding Nature and Assignment) shall be null and void.

17.8. Notices

(a) Whenever one Party is required or permitted to give a notice, communication or consent to the other Party under the Contract Documents, such notice, communication or consent will be in writing unless otherwise specifically provided herein and will be deemed given when delivered by hand, one (1) day after being given to an express courier with a reliable system for tracking delivery, or five (5) days after the day of mailing, when mailed by United States mail or registered or certified mail, return receipt requested, postage prepaid.

(b) **Notifications will be addressed as follows:**

In the case of Provider: with a copy to:

Provider Project Manager

[**ADDRESS]**

In the case of Company:	with a copy to:
Company Designated Representative Via U.S. Mail Hawaii Electric Company, Inc. P.O. Box 2750 Honolulu, HI 96840 Attention: _____ Via Overnight Mail or Hand Delivery: **[INSERT]**	Via U.S. Mail: Hawaiian Electric Company, Inc. P.O. Box 2750 Honolulu, HI 96840 Attention: Legal Dept. Via Overnight Mail or Hand Delivery: Hawaiian Electric Company, Inc. 1001 Bishop Street, Suite 1100 Honolulu, HI 96813 Attention: Legal Dept.

Either Party hereto may from time to time change its address for notification purposes by giving the other prior written notice of the new address and the date upon which it will become effective.

17.9. Governing Law; Forum

This Master Agreement, all Work Authorizations and all other Contract Documents hereunder and thereunder are made under and shall be governed by and construed in accordance with the laws of the State of Hawaii. Each Party agrees and consents that any Dispute arising out of the Contract Documents, however defined, shall be brought in the State of Hawaii in a court of competent jurisdiction.

17.10. Further Assurances

During the Term and at all times thereafter, each Party shall provide to the other Party, at its request, reasonable cooperation and assistance (including the execution and delivery of affidavits, declarations, oaths, assignments, samples, specimens and any other documentation) as necessary to effect the terms of the Contract Documents.

17.11. Amendments

This Master Agreement, all Work Authorization and the other Contract Documents may be amended or supplemented only by written instrument duly executed by each of the parties. Any terms and conditions purporting to vary from the Contract Documents that were not properly mutually executed as required hereunder shall not be effective or binding on the other Party.

17.12. Attorneys' Fees and Costs

If there is a dispute between the parties and either Party institutes a lawsuit, arbitration, mediation, or other proceeding to enforce, declare, or interpret the terms of this Master Agreement, the prevailing Party shall be awarded its reasonable attorneys' fees and costs.

IN WITNESS WHEREOF, the parties hereto, each acting under due and proper authority, have executed this Master Agreement as of the date written above.

PROVIDER:
[INSERT FULL LEGAL NAME]

By: _____

Name: _____

Title: _____

COMPANY:
HAWAIIAN ELECTRIC COMPANY, INC.

By: _____

Name: _____

Title: _____

By: _____

Name: _____

Title: _____

Exhibit 1

Definitions

The following terms used in the Technology Consulting Master Services Agreement (No. _____) shall have the meanings indicated:

1.01 "**Action Plan**" has the meaning given in Section 8.5(f) (Action Plan).

1.02 "**Affected Products"** has the meaning given in Section 6.1(j)(Open Source).

1.03 "**Affiliate**" means, with respect to a Party, any entity at any tier that controls, is controlled by, or is under common control with that Party. For purposes of this definition, the term "control" (including with correlative meanings, the terms "controlled by" and "under common control with") means the possession directly or indirectly of the power to direct or cause the direction of the management and policies of an entity, whether through the ownership of voting securities, by trust, management agreement, contract or otherwise. A person or entity will be conclusively deemed to "control" another person or entity, if it is the "beneficial owner," as defined pursuant to Section 12 of the Securities Exchange Act of 1934, as amended, and the related rules and regulations, of securities of that entity having the power to cast more than fifty percent (50%) of the votes entitled to be cast for the election of directors or similar managers of such entity.

1.04 "**Audit Compliance Liaison"** has the meaning given in Section 8.5(j) (Provider Compliance Manager).

1.05 "**Billing Period**" has the meaning given in Section 4.4(b)(Invoicing).

1.06 "**Business Days**" means each Monday through Friday, other than national holidays recognized by Company.

1.07 "**CA**" has the meaning given in Section 10.1(d).

1.08 "**Change**" means: (1) any change to (a) the Services, (b) the Service Levels or (c) the Provider Information System used to provide the Services that, in each case, would alter the (i) functionality, Service Levels or technical environment of the Provider Information System used to provide the Services, (ii) manner in which the Services are provided, (iii) composition of the Services or (iv) cost to Company or Provider of the Services; (2) any change to (a) the Project Site or (b) the Company Security Requirements; (3) any change that disrupts the provision of the Services; or (4) any amendment, modification, addition or deletion proposed by a Party to the Contract Documents.

1.09 "**Change of Control**" means the transfer of Control (as defined in the definition of "**Affiliate**"), or sale of all or substantially all of the assets (in one or more transactions), of a Party or other designated person or entity, from the person or persons that hold such Control of such Party or other designated person or entity on the Effective Date to another person or persons, but shall not include a transfer of Control, or such a sale of assets, to an Affiliate of such Party or the loss of Control by such person or persons without a resulting transfer to another person or persons (e.g., pursuant to the issuance of voting securities representing Control in a broadly-distributed public offering) or other designated person or entity.

1.10 "**Change Order**" means a document that amends the Master Agreement, Work Authorization, SOW, or any other Contract Document and which is executed by the Parties, in accordance with the change order procedures in the applicable Work Authorization or SOW.

1.11 "**Charges**" are fees and other compensable items set forth in the "Price".

1.12 "**Claim**" means any civil, criminal, administrative, regulatory or investigative action or proceeding commenced or threatened by a Third Party, including, without limitation, Governmental Authorities and regulatory agencies, however described or denominated.

1.13 "**COI**" has the meaning given in Section 14.2(b).

1.14 "**Commencement Date**" means the date(s) on which Provider begins to provide Services, pursuant to a properly executed Work Authorization for each SOW, to the Company as agreed upon by the Parties. Each Work Authorization shall identify the applicable Commencement Date.

1.15 "**Commission**" has the meaning given in Section 10.1(d).

1.16 "**Company**" has the meaning given in the preamble.

1.17 "**Company Auditors**" has the meaning given in Section 8.5(b).

1.18 "**Company Audits**" has the meaning given in Section 8.5(d)(i).

1.19 "**Company Confidential Information**" means the Confidential Information of the Company, including the Company Data.

1.20 "**Company Data**" means (i) all data and information generated, provided or submitted by, or caused to be generated, provided or submitted by, the Company in connection with the Services; (ii) all data and information regarding the business of the Company collected, generated or submitted by, or caused to be generated, provided or submitted by, Provider and/or its Affiliates and subcontractors; (iii) all such data and information processed or stored, and/or then provided to or for the Company Group, as part of the Services, including, without limitation, data contained in forms, reports and other similar documents provided by Provider as part of the Services; and (iv) Personally Identifiable Information.

1.21 "**Company Indemnitees**" has the meaning given in Section 13.1.

1.22 "**Company Proprietary Software**" means shall mean the Software, including the Software, and Related Documentation owned, acquired or developed by Company and used in connection with the provision of the Services.

1.23 "**Company Pre-existing Material**" has the meaning given in Section 9.3(b).

1.24 "**Company Rules**" has the meaning given in Section 3.2(b).

1.25 "**Company Security Requirements**" means the Physical Security and Systems Security measures required pursuant to the Exhibit 3.

1.26 "**Company Software**" means the Company Proprietary Software and Company Third Party Software listed on the "Company Software" Exhibit in the applicable SOW that will be used by Provider in performing and providing Services under the Contract Documents.

1.27 "**Company Systems**" means the Equipment, Company Software, data networks and systems used and operated by the Company for its technology requirements, excluding the Provider Information System.

1.28 "**Company Third Party Software**" means the Software and Related Documentation that is licensed or leased by Company from a third party and used in connection with the provision of the Services.

1.29 "**Company Tools**" means to the Tools owned or licensed by Company and identified in the applicable SOW.

1.30 "**Company's Designated Representative**" is the person so-identified as such in the applicable Work Authorization.

1.31 "**Contract Documents**" has the meaning given in Section 1.1(b).

1.32 "**Contract Price**" see the definition of "Price" below.

1.33 "**Contract Year**" means each twelve-month period commencing on the Effective Date or any anniversary of the Effective Date during the Term.

1.34 "**Derivative Work**" means a derivative work as defined in Title 17 U.S.C. § 101, as amended.

1.35 **"Developed Software**" shall mean any Software, modifications or enhancements to Software and Related Documentation developed pursuant to this Master Agreement by or on behalf of (1) Provider, (2) Provider subcontractors, (3) Provider and Company or Company subcontractors jointly, (4) Provider subcontractors and Company or Company subcontractors jointly or (5) Provider, Provider subcontractors, Company and Company subcontractors jointly.

1.36 "**Disabling Code**" means computer programming code which could have the effect of permitting improper use, access, deletion or modification of, or disabling, deactivating, damaging or shutting down one or more software programs or systems and/or hardware or hardware systems, including "time bombs," "protect codes," "data destruction keys," "trap doors" and similar code or devices.

1.37 "**Disclosing Party**" has the meaning given in Section 10.1(a).

1.38 "**Dispute**" means any dispute, controversy or Claim, including, without limitation, situations or circumstances in which the Parties are required to mutually agree on additions, deletions or changes to terms, conditions or Charges, arising out of, or relating to, the Master Agreement.

1.39 "**Dispute Resolution Procedures**" means the process for resolving Disputes set forth in Article 15 of the Master Agreement.

1.40 "**Effective Date**" has the meaning given in the preamble.

1.41 "**Embedded Provider Software**" has the meaning given in Section 9.6.

1.42 **"Environment**" has the meaning given in Section 5.5.

1.43 "**Equipment**" shall mean computers and related equipment, including central processing units and other processors, networks, controllers, modems, communications and telecommunications equipment (voice, data and video), cables, storage devices, printers, terminals, other peripherals and input and output devices, and other tangible mechanical and electronic equipment intended for the processing, input, output, storage, manipulation, communication, transmission and retrieval of information and data.

1.44 "**Execution Date**" means the date that any Work Authorization or SOW, respectively, is signed by both parties.

1.45 "**Financial Audits**" has the meaning given in Section 8.5(c).

1.46 "**Force Majeure Event**" has the meaning given in Section 17.3(d).

1.47 "**Governmental Authority**" means any nation or government, any federal, state, province, territory, city, town, municipality, county, local or other political subdivision thereof or thereto, any quasi-Governmental Authority, and any court, tribunal, arbitral body, taxation authority, department, commission, board, bureau, agency, instrumentality thereof or thereto or otherwise which exercises executive, legislative, judicial, regulatory or administrative functions of or pertaining to government.

1.48 "**Intellectual Property Rights**" means any and all intellectual property rights existing from time to time under any Law including patent law, copyright law, semiconductor chip protection law, moral rights law, trade secret law, trademark law (together with all of the goodwill associated therewith), unfair competition law, publicity rights law, or privacy rights law, and any and all other proprietary rights, and any and all applications, renewals, extensions and restorations of any of the foregoing, now or hereafter in force and effect worldwide. For purposes of this definition, rights under patent law shall include rights under any and all patent applications and patents (including letters patent and inventor's certificates) anywhere in the world, including, without limitation, any provisionals, substitutions, extensions, supplementary patent certificates, reissues, renewals, divisions, continuations in part (or in whole), continued prosecution applications, requests for continued examination, and other similar filings or stages thereof provided for under the laws of the United States, or of any other country.

1.49 **"Law(s)**" means all applicable laws (including those arising under common law), statutes, codes, rules, regulations, reporting or licensing requirements, ordinances and other pronouncement having the effect of law of the United States, any foreign country or any domestic or foreign state, county, city or other political subdivision, including those promulgated, interpreted or enforced by any governmental or regulatory authority, and any order of a court or governmental agency of competent jurisdiction. Laws include all Privacy Laws.

1.50 "**Losses**" means all judgments, settlements, awards, damages, losses, charges, liabilities, penalties, interest claims (including taxes and all related interest and penalties incurred directly with respect thereto), however described or denominated, and all related reasonable costs, expenses and other charges (including all reasonable attorneys' fees and reasonable internal and external costs of investigations, litigation, hearings, proceedings,

document and data productions and discovery, settlement, judgment, award, interest and penalties), however described or denominated.

1.51 "**Malware**" means computer software, code or instructions that: (a) adversely affect the operation, security or integrity of a computing, telecommunications or other digital operating or processing system or environment, including without limitation, other programs, data, databases, computer libraries and computer and communications equipment, by altering, destroying, disrupting or inhibiting such operation, security or integrity; (b) without functional purpose, self-replicate written manual intervention; (c) purport to perform a useful function but which actually perform either a destructive or harmful function, or perform no useful function and utilize substantial computer, telecommunications or memory resources; or (d) without authorization collect and/or transmit to third parties any information or data; including such software, code or instructions commonly known as viruses, Trojans, logic bombs, worms, adware and spyware.

1.52 "**Master Agreement**" has the meaning set forth in the preamble.

1.53 "**Materials**" means computer programs, computer program listings, computer program tools, or computer program documentation, reports and drawings, as well as user manuals, charts, graphs and other written documentation and machine-readable text and files, including, computer programming code (including source code and object code) and all other works of authorship.

1.54 "**Notice Date**" has the meaning given in Section 15.1(b).

1.55 "**Notification Related Costs**" means Company's internal and external costs associated with addressing and responding to a Security Breach, including but not limited to: (a) preparation and mailing or other transmission of legally required notifications; (b) preparation and mailing or other transmission of such other communications to customers, agents or others as Company deems reasonably appropriate; (c) establishment of a call center or other communications procedures in response to such Security Breach (e.g., customer service FAQs, talking points and training); (d) public relations and other similar crisis management services; (e) legal and accounting fees and expenses associated with Company's investigation of and response to such event; and (f) costs for commercially reasonable credit reporting services that are associated with legally required notifications or are advisable under the circumstances.

1.56 "**Open Source Software**" means software that (a) requires a licensor to cause source code to be distributed with the software or made available to any third party when the software is distributed or otherwise provided in any fashion to a third party; (b) restricts or impairs in any way Company's ability to license the software pursuant to terms of Company's choosing; (c) impacts in any fashion or limit Company's ability to enforce its patent or other intellectual property rights against any third party in any manner; or (d) Company's rights to will be terminated or affected in any manner if Company asserts any of its intellectual property rights against any third party in connection with such software or otherwise. Without limitation of the foregoing, Open Source Software shall include software subject to any version of the General Public License or the Lesser General Public License, or any license which has been certified as an "open source" license by the Open Source Initiative.

1.57 "**Operational Audits**" has the meaning given in Section 8.5(b).

1.58 "**Party**" or "**Parties**" means Company and/or Provider.

1.59 "**Pass Through Charges**" has the meaning set forth in the "Price".

1.60 "**PCAOB**" has the meaning given in Section 8.5(b).

1.61 "**Person**" means an individual, corporation, limited liability company, partnership, trust, association, joint venture, unincorporated organization or entity of any kind or nature, or a Governmental Authority.

1.62 "**Personally Identifiable Information**" means personally identifiable information of individuals, and any information that may be used to track, locate or identify such individuals (or which is otherwise protected by Law), which is generated by or disclosed to Provider or its subcontractors in connection with the Services, and includes such information of Company employees and of individuals who seek to obtain, obtain, or have obtained products or services from the Company, which products and services are used or intended to be used for personal, family or household purposes.

1.63 "**Physical Security**" means physical security at any Location housing systems maintained by Provider or its agents or subcontractors in connection with the Services and in the course of physical transportation of assets used by Provider in performing the Services and physical media including Company Confidential Information.

1.64 "**Pre-existing Materials**" has the meaning given in Section 9.5.

1.65 "**Privacy Laws**" means (a) all applicable international, federal, state, provincial and local laws, rules, regulations, directives and governmental requirements currently in effect and as they become effective relating in any way to the privacy, confidentiality or security of Personally Identifiable Information including, without limitation, Cal. Civ. Code § 1798.81.5, 201 Mass. Code Reg. 17.00, the Canadian Personal Information Protection and Electronic Documents Act (PIPEDA); the Controlling the Assault of Non-Solicited Pornography and Marketing Act (CAN-SPAM); the FTC Disposal of Consumer Report Information and Records Rule, 16 C.F.R. § 682 (2005); and all other similar international, federal, state, provincial, and local requirements, (b) all applicable industry standards concerning privacy, data protection, confidentiality or information security currently in effect and as they become effective, including without limitation the Payment Card Industry Data Security Standard, and any other similar standards, and (c) applicable provisions of all Company privacy policies, statements or notices that are provided or otherwise made available to Provider.

1.66 "**Process**" or "**Processing**" means any operation or set of operations which is performed upon Personally Identifiable Information, whether or not by automatic means, such as collection, recording, organization, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, blocking, erasure or destruction.

1.67 "**Project Site**" means the Company premises where the Services shall be performed.

1.68 "**Price**" or "**Contract Price**" shall mean the price for the Services provided under a Work Authorization.

1.69 "**Project Manager"** means the individual assigned by the Provider to be the focal point for communications with the other Party regarding the Contract Documents. A Party's Project Manager is authorized to execute any Change Order and the Work Authorization for any SOW

on behalf of that Party, subject to the signature authority restrictions for the Company set forth in Section 1.2(f).

1.70 "**Provider Equipment**" means all Equipment owned or leased by Provider that is used, directly or indirectly, to provide the Services.

1.71 "**Provider Indemnitees**" has the meaning given in Section 13.2.

1.72 "**Provider Information System**" means the Provider Equipment, Provider Software, data network(s) and systems provided and/or used (whether owned, under contract and/or licensed) by Provider to perform and provide the Services.

1.73 ["**Provider Parent**" means **[NAME].]**

1.74 "**Provider Pre-existing Material**" has the meaning given in Section 9.3(a).

1.75 "**Provider Proprietary Software**" means shall mean the Software and Related Documentation owned, acquired or developed by or on behalf of Provider (and any modifications or enhancements thereto), excluding in each case the Developed Software, and used in connection with the Services or with any Provider Software or Company Software.

1.76 "**Provider Records** has the meaning given in Section 8.5(a).

1.77 "**Provider Software**" means the Provider Proprietary Software and Provider Third Party Software.

1.78 "**Provider Third Party Software**" means the Software and Related Documentation licensed, leased or otherwise obtained by Provider from a third party that is used in connection with the Services or with any Provider Software or Company Software.

1.79 "**Provider Tools**" means the tools described in each applicable SOW.

"**Receiving Party**" has the meaning given in Section 10.1(a).

1.80 **"Related Documentation"** shall mean, with respect to Software and Tools, all materials, documentation, specifications, technical manuals, user manuals, flow diagrams, file descriptions and other written information that describes the function and use of such Software or Tools, as applicable.

1.81 "**Reports**" has the meaning given in Section 3.7.

1.82 "**Responsibilities**" has the meaning given in Section 3.1(b).

1.83 "**Security Breach**" means (a) any circumstance pursuant to which applicable Law requires notification of such breach to be given to affected parties or other activity in response to such circumstance; or (b) any actual, attempted, suspected, threatened, or reasonably foreseeable circumstance that compromises, or could reasonably be expected to compromise, either Physical Security or Systems Security (as such terms are defined below) in a fashion that either does or could reasonably be expected to permit unauthorized Processing, use, disclosure or acquisition of or access to any Company Data, Company Software, Work Product or any Company Confidential Information developed, maintained, processed or transmitted by Provider or its agents or subcontractors in connection with the Services.

1.84 "**Service Level**" has the meaning set forth in the "Service Level Agreement" included in the applicable SOW. Each "Service Level Agreement" shall be promptly updated and modified from time to time by the Parties to reflect changes to the Service Levels related to the associated Services.

1.85 "**Service Level Agreement**" means the "Service Level Agreement" included in the applicable SOW specifying the service level methodology and the Service Levels applicable to the Services described in each SOW, remedies for Provider's failure to comply with such Service Levels, including but not limited to applicable Service Level Credits, procedures for modifying and improving Service Levels and related provisions.

1.86 "**Service Level Credits**" has the meaning set forth in the "Service Level Agreement" included in the applicable SOW.

1.87 "**Service Level Termination Event**" has the meaning set forth in the applicable "Service Level Agreement".

1.88 "**Services**" means the services, functions and responsibilities described in this Master Agreement (including the services, functions and responsibilities and projects described in any SOW) and any services, functions and responsibilities not specifically described in this Agreement, but which are required for the proper performance and delivery of the Services..

1.89 **"Software"** means the source code and object code versions of any applications programs, operating system software, computer software languages, utilities, other computer programs and Related Documentation, in whatever form or media, including the tangible media upon which such applications programs, operating system software, computer software languages, utilities, other computer programs and Related Documentation are recorded or printed, together with all corrections, improvements, updates and releases thereof.

1.90 **"SOW(s)"** has the meaning given in Section 1.1(b).

1.91 **"Subject Damages**" is defined in Section 12.1(a) of the Master Agreement.

1.92 "**Successor Provider**" means an entity that provides services to Company similar to the Services following the termination or expiration of the Master Agreement.

1.93 "**Systems Security**" means security of computer, electronic or telecommunications systems of any variety (including data bases, hardware, software, storage, switching and interconnection devices and mechanisms), and networks of which such systems are a part or communicate with, used directly or indirectly by Provider or its agents or subcontractors in connection with the Services.

1.94 "**Tax**" or "**Taxes**" means federal, state and local sales, use, excise, telecommunications, and other similar types of transfer taxes, fees or charges (including any related penalties, additions to tax, and interest), however designated or imposed, which are in the nature of a transaction tax, fee or charge, but not including any taxes, duties, fees or charges imposed on or measured by net or gross income or gross receipts, capital stock or net worth or in the nature of an income, capital, franchise, or net worth tax.

1.95 "**Term**" means the term of the Master Agreement as specified in Section 2.1.

1.96 "**Third Party**" means a person, business or entity other than the Company or the Provider.

1.91 "**Third Party Agreements**" means those agreements for which Provider has undertaken financial, management, operational, use, access and/or administrative responsibility and/or benefit in connection with the provision of the Services, and pursuant to which the Company has contracted with a Third Party Provider to obtain any Third Party products, software and/or services that will be used, accessed and/or managed in connection with the Services. Third Party Agreements are listed on "Third Party Agreements" Exhibit to the applicable SOW, which Exhibit shall be promptly updated and modified from time to time by the Parties to reflect the then-current Third Party Agreements.

1.92 "**Third Party Provider**" means a business or entity other than the Company or the Provider or its Affiliates or subcontractors that provides products, software and/or services under a Third Party Agreement**.**"

1.93 "**Third Party Software**" means _____.

1.94 "**Tools**" means any Software development and performance testing tools, know-how, methodologies, processes, technologies or algorithms and Related Documentation used by Provider in providing the Services.

1.95 "**Withholding Taxes**" means foreign, federal, and state and local taxes, fees, or charges which are imposed on or by reference to gross or net income or gross or net receipts and are required under Law to be withheld by Company from payments made to Provider under this Master Agreement (including any related penalties and interest thereon).

1.96 "**Work Authorization"** has the meaning set forth in Section 1.2.

1.97 "**Work Product**" has the meaning set forth in Section 9.5(a).

EXHIBIT 2
FORM OF WORK AUTHORIZATION

WORK AUTHORIZATION NO.
Under Purchase Order No. /Contract No.

I. Request for Quote

Under the terms and conditions of the Technology Consulting Master Services Agreement, dated _____, by and between _____ ("Provider") and Hawaiian Electric Company, Inc. ("Company"), Company hereby requests a proposal from Provider to perform the following Work:

_____
_____
_____

Dated: _____ _____
Company

II. Provider's Proposal

Provider hereby proposes to perform the Work described above in Section I, under said terms and conditions, for the following amount:_____.

Total not-to-exceed cost is _____. Total not-to-exceed manhours required is _____.

Work will begin no later than _____ and be completed on or before _____.

_____ will act as Provider's Project Manager during the performance of this Work.

Dated: _____ _____
Provider

III. Work Authorization

Provider's foregoing Proposal is accepted. Provider is authorized to perform the Work as proposed. Company's Designated Representative for this Work Authorization shall be _____.

Dated: _____ _____
Company

Dated: _____ _____
Company

[Add Additional Exhibits]

Appendix H – Standard Business Travel and Expense Terms

See electronic document called "Appendix H – Standard Business Travel and Expense Terms.pdf".

END

Hawaiian Electric Company
Hawaii Electric Light Company
Maui Electric Company

Standard Business Travel and Expense Terms

1. Approved Class of Travel

a. Air Travel – Coach
b. Lodging – Budget (e.g. Best Western) or Moderate (e.g. Embassy Suites)
c. Transportation – Shuttle service, taxi or rental car. For rental cars, use compact size cars (full-size acceptable for 3 or more occupants)

2. Eligible Charges For Reimbursement

a. Company will not reimburse or compensate the consultant for using personal mileage for airfare for Company-related business.[1]
b. Company will only pay for the consultant's round trip airfare to the designated Company location, and will not pay for consultant's personal travel.
c. Company will not be responsible for consultant's airfare ticket change fees or penalties unless the changes were made at the request of the Company.
d. Company will not reimburse consultant for alcoholic beverages.
e. All consultant meals should be in connection with Company-related work and Company will reimburse for food and non-alcoholic beverages only.
f. Allowable Company-related work incidentals (e.g. parking, internet connection, etc.) are reimbursable to the consultant at cost.
g. Reasonable gratuities incurred in connection with Company-related work will be reimbursed to the consultant. Tips for restaurant services should be reported as part of the cost of the meal.
h. All charges submitted for reimbursement by the consultant must be supported by the actual invoice or original itemized receipt.
i. Company will reimburse the consultant for only those expenses that are reasonable, required, and approved.
j. Expenses that are optional (e.g. magazines, movies, etc.) or of a personal nature (e.g. over-the-counter drugs and toiletries) are not reimbursable to the consultant.

3. Non-Business Day Costs

Company will not reimburse the consultant for costs incurred on non-business days. Non-business days are days without a business purpose. However, days used in traveling or layovers because of no available flights and weekends or legal holidays between business days are generally considered business days for purposes of these terms, if Company-related work was conducted on the day before the weekend or holiday and additional Company-related work will be conducted on the day following the weekend or holiday.

[1] "Company" means Hawaiian Electric Company, Hawaii Electric Light Company or Maui Electric Company, as the case may be. "Consultant" means any consultant, contractor, vendor or other person or entity hired by a Company.